



# SEQUENCE LISTING

<110> .. Ausubel, Frederick M.  
Calderwood, Stephen B.  
Garsin, Danielle A.  
Mylonakis, Eleftherios  
Sifri, Costi D.

<120> Enterococcal Virulence Factors

<130> 00786/408002

<140> US 10/758,979

<141> 2004-01-16

<150> PCT/US02/22979

<151> 2002-07-18

<150> US 60/306,212

<151> 2001-07-18

<160> 47

<170> PatentIn version 3.3

<210> 1

<211> 2267

<212> DNA

<213> Enterococcus faecalis

<400> 1

gaaattgacc gtaaagtcaa tatttacaac attttaagcc tgaatgcgct aggtacgcta	60
tacgaactgg aaaaagatat gagaaaagcg caagtgtatt acgaaaaatc attacaagaa	120
ttggaacaat ttaaattaga atgttccttg gagcggttga gaatttatta taattctgct	180
aaattctact cggaaatgaa agactaccaa aaaagtggtca ttttaagcga aaaagggatt	240
cagatttggtc gtgacaaaca ctccatttat ttgctagatt atcttttata tgaaaaagcc	300
tttaacaaac aaatgctcgg ggaagacaca gccgatgact atcgccaagc ctattatatt	360
acacaatttt ttggcaatac ggaagtcttg caatatattg agaaagatat gaaagctttt	420
aatatttcct attaatTTaa tcaaaaagcc gataaaagct gaaaactcag tttttaccgg	480
ctttttgaaa aatataggca agttgctttt aaaaatcagc agtcacgggtt acgataagca	540
agacgaagta tttaggagga tttaaaaatg aaaagagtaa tatggtttag acgtgattta	600
cgattacagg ataataaagc attagcacac gcgttacaaa attctgcagc tgatgaattg	660
atTTttattat tccaaatgaa tcctcaacaa tttattcaag aaagtgctaa tcataacgct	720
ttttttgcaa gcttagcctc gttcaaagaa cgaatcgatc aagaggcaca tttacaaatc	780

atgggtcggcg aaccattaga tttattttca cgtttgaaac gcaaattacc cgattggcag	840
gccatttatt ttaatgaaga tacttgtggc tttggggcaa agcgggacca gcaagctatg	900
cgcttttttg aagaaaataa tattcagtct ttctcttttc aagatgccta tttgcatggc	960
tctgaagaaa ttaagaagaa cgatggcagc aagtaccaag tgtttacgcc ctattacaat	1020
aaatggaaag aggcgcctaa agaaacaccg attcctgttt cctatacagc tgaaaaaatt	1080
tttagtgcgt gtctttttcc agaagaggaa gcagcttata gtgaacagat tgcgaggatt	1140
cctttaacac actatagtgt cggcgaagaa acagccagaa ggcgcttaaa tacttttatt	1200
gatcaaaaac ttcaatccta tgaaaataag cgtgattttc cttatcagga tcaaacgagt	1260
catctgtcta cttttttaag aacgggagaa ctttcgattc gcaccatttg gcaagagctt	1320
gcatctgtgc cttctagctt aagtaaagaa accttcaaaa agaattagc ttggcgcgac	1380
ttttacaata tgatctatag tgcgtttcca caacaaaaag aggaagctat tcaagaaaaa	1440
tttcgttata ttcaatggac aaatgaccca gaaatgtttg tcaagtggca aaaaggggag	1500
acggggtacc ctataattga tgccgcaatg cgacaactga atcaaactgg ttggatgcac	1560
aatcgcttaa gaatgattac tgccctcttt ttagttaaaa atttacacat cgattggcgt	1620
tggggtgaaa aatactttca aaaaatgttg attgactatg atgctgcaa taatatcggt	1680
ggctggcaat gggctgcttc aacaggaacg gacgctgtcc cttattttcg gatttttaat	1740
ccaattatcc agtcaaaaaa atttgataat gacggccagt tcatcaaaaa atatgttcca	1800
gaacttaagc aagtgccaca aaagtatatt catcaaccaa atctaataaa cgaagcctta	1860
caaacgcaat atcatgtaca tttaggagaa aattatccaa aaccatttgt cgattatgca	1920
tcaagtaaaa aacaaacatt gtttctatat gaagcgagca aagaaattca tcaagaaatg	1980
aacaatccaa ggtttcaata aacagtaaac ccaactagct tagcaaaca cttgtaaggt	2040
tagttgggca aattaattag tcgaaagaga agtgcaattt atcggctaaa gttttttatt	2100
ctattctagt taacataata tacattatac aaagtagagt aaaaagcatt gaaaagcaaa	2160
caaaaccagt ctttagttta tctagactgg ttttgtcacg tacgttatat aaattatgct	2220
tgttgcttga tggttgtgc gacacgtgct ccatattctg gatttac	2267

<210> 2  
 <211> 1434  
 <212> DNA  
 <213> *Enterococcus faecalis*  
 <400> 2

atgaaaagag taatatggtt tagacgtgat ttacgattac aggataataa agcattagca	60
cacgcgttac aaaattctgc agctgatgaa ttgattttat tattccaaat gaatcctcaa	120
caattttattc aagaaagtgc taatcataac gctttttttg caagcttagc ctcgttcaaa	180
gaacgaatcg atcaagaggc acattttaca atcatggctg gcgaaccatt agattttattt	240
tcacgtttga aacgcaaatt acccgattgg caggccattt attttaatga agatacttgt	300
ggctttgggg caaagcggga ccagcaagct atgcgctttt ttgaagaaaa taatattcag	360
tctttctctt ttcaagatgc ctatttgcac ggctctgaag aaattaagaa gaacgatggc	420
agcaagtacc aagtgtttac gccctattac aataaatgga aagaggcgcc taaagaaaca	480
ccgattcctg tttcctatac agctgaaaaa attttttagtg cgtgtctttt tccagaagag	540
gaagcagctt atcgtgaaca gattgcgagg attcctttta cactatag tgcggcgaa	600
gaaacagcca gaaggcgctt aaatactttt attgatcaaa aacttcaatc ctatgaaaat	660
aagcgtgatt ttccttatca ggatcaaacg agtcatctgt ctactttttt aagaacggga	720
gaactttcga ttcgcaccat ttggcaagag cttgcatctg tgccttctag ctttaagtaa	780
gaaaccttca aaaaagaatt agcttggcgc gacttttaca atatgatcta tagtgcgttt	840
ccacaacaaa aagaggaagc tattcaagaa aaatttcggt atattcaatg gacaaatgac	900
ccagaaatgt ttgtcaagtg gcaaaaaggg gagacggggt accctataat tgatgccga	960
atgcgacaac tgaatcaaac tggttggatg cacaatcgct taagaatgat tactgcctct	1020
tttttagtta aaaatttaca catcgattgg cgttggggtg aaaaatactt tcaaaaaatg	1080
ttgattgact atgatgctgc caataatata ggtggctggc aatgggctgc ttcaacagga	1140
acggacgctg tcccttattt tcggattttt aatccaatta tccagtcaaa aaaatttgat	1200
aatgacggcc agttcatcaa aaaatatggt ccagaactta agcaagtgcc acaaaagtat	1260
attcatcaac caaatctaata gaacgaagcc ttacaaacgc aatatcatgt acatttagga	1320
gaaaattatc caaaacccat tgcgattat gcatcaagta aaaaacaaac attgtttcta	1380
tatgaagcga gcaagaaat tcatcaagaa atgaacaatc caaggtttca ataa	1434

<210> 3  
 <211> 477  
 <212> PRT  
 <213> Enterococcus faecalis

<400> 3

Met Lys Arg Val Ile Trp Phe Arg Arg Asp Leu Arg Leu Gln Asp Asn

1	5	10	15												
Lys	Ala	Leu	Ala	His	Ala	Leu	Gln	Asn	Ser	Ala	Ala	Asp	Glu	Leu	Ile
	20						25						30		
Leu	Leu	Phe	Gln	Met	Asn	Pro	Gln	Gln	Phe	Ile	Gln	Glu	Ser	Ala	Asn
	35						40					45			
His	Asn	Ala	Phe	Phe	Ala	Ser	Leu	Ala	Ser	Phe	Lys	Glu	Arg	Ile	Asp
	50					55					60				
Gln	Glu	Ala	His	Leu	Gln	Ile	Met	Val	Gly	Glu	Pro	Leu	Asp	Leu	Phe
65					70					75					80
Ser	Arg	Leu	Lys	Arg	Lys	Leu	Pro	Asp	Trp	Gln	Ala	Ile	Tyr	Phe	Asn
			85						90					95	
Glu	Asp	Thr	Cys	Gly	Phe	Gly	Ala	Lys	Arg	Asp	Gln	Gln	Ala	Met	Arg
		100						105					110		
Phe	Phe	Glu	Glu	Asn	Asn	Ile	Gln	Ser	Phe	Ser	Phe	Gln	Asp	Ala	Tyr
		115					120					125			
Leu	His	Gly	Ser	Glu	Glu	Ile	Lys	Lys	Asn	Asp	Gly	Ser	Lys	Tyr	Gln
	130						135				140				
Val	Phe	Thr	Pro	Tyr	Tyr	Asn	Lys	Trp	Lys	Glu	Ala	Pro	Lys	Glu	Thr
145					150					155					160
Pro	Ile	Pro	Val	Ser	Tyr	Thr	Ala	Glu	Lys	Ile	Phe	Ser	Ala	Cys	Leu
			165						170					175	
Phe	Pro	Glu	Glu	Glu	Ala	Ala	Tyr	Arg	Glu	Gln	Ile	Ala	Arg	Ile	Pro
		180						185					190		
Leu	Thr	His	Tyr	Ser	Val	Gly	Glu	Glu	Thr	Ala	Arg	Arg	Arg	Leu	Asn
		195					200					205			
Thr	Phe	Ile	Asp	Gln	Lys	Leu	Gln	Ser	Tyr	Glu	Asn	Lys	Arg	Asp	Phe
	210					215					220				
Pro	Tyr	Gln	Asp	Gln	Thr	Ser	His	Leu	Ser	Thr	Phe	Leu	Arg	Thr	Gly
225					230					235					240

Glu Leu Ser Ile Arg Thr Ile Trp Gln Glu Leu Ala Ser Val Pro Ser  
245 250 255

Ser Leu Ser Lys Glu Thr Phe Lys Lys Glu Leu Ala Trp Arg Asp Phe  
260 265 270

Tyr Asn Met Ile Tyr Ser Ala Phe Pro Gln Gln Lys Glu Glu Ala Ile  
275 280 285

Gln Glu Lys Phe Arg Tyr Ile Gln Trp Thr Asn Asp Pro Glu Met Phe  
290 295 300

Val Lys Trp Gln Lys Gly Glu Thr Gly Tyr Pro Ile Ile Asp Ala Ala  
305 310 315 320

Met Arg Gln Leu Asn Gln Thr Gly Trp Met His Asn Arg Leu Arg Met  
325 330 335

Ile Thr Ala Ser Phe Leu Val Lys Asn Leu His Ile Asp Trp Arg Trp  
340 345 350

Gly Glu Lys Tyr Phe Gln Lys Met Leu Ile Asp Tyr Asp Ala Ala Asn  
355 360 365

Asn Ile Gly Gly Trp Gln Trp Ala Ala Ser Thr Gly Thr Asp Ala Val  
370 375 380

Pro Tyr Phe Arg Ile Phe Asn Pro Ile Ile Gln Ser Lys Lys Phe Asp  
385 390 395 400

Asn Asp Gly Gln Phe Ile Lys Lys Tyr Val Pro Glu Leu Lys Gln Val  
405 410 415

Pro Gln Lys Tyr Ile His Gln Pro Asn Leu Met Asn Glu Ala Leu Gln  
420 425 430

Thr Gln Tyr His Val His Leu Gly Glu Asn Tyr Pro Lys Pro Ile Val  
435 440 445

Asp Tyr Ala Ser Ser Lys Lys Gln Thr Leu Phe Leu Tyr Glu Ala Ser  
450 455 460

Lys Glu Ile His Gln Glu Met Asn Asn Pro Arg Phe Gln  
 465 470 475

<210> 4  
 <211> 2543  
 <212> DNA  
 <213> Enterococcus faecalis

<400> 4  
 ccttttgaaa atttagatga aggatttgat gtctacgcc a tcaagcctt taatgcgcc 60  
 gatggtcgtg cacttgcggt cagttggatt gggttgccag aaatcactta cccaagtgat 120  
 gtggagggtt gggcaaattg cttaagtctg gttaaagaac tcacaattca caacgggaaa 180  
 ctatttcaat atccagtttc tgaaacagaa atgcttcgtc aatccgctac tactttatca 240  
 aatggctgcc atttcttata tactgcttct tttgaattag aagtggatat tcccaaaaat 300  
 gagattgctt ttattcggtt tttagcgaac gaaacgggtt caaaaggact ttttaattaca 360  
 attgatacga ttcattgtaa aataaccctt gatcgaacat ttgctggcca atcttttgct 420  
 gaaaagtatg gcacaattcg tgaaactaaa attaggaaaa ataagtcagt tcagttaact 480  
 atttttgttg attgctctgt tgcagaaatc tatgtaaata aagggtgaaaa aacgatgact 540  
 ggtcgttctt ttccagataa agcgcaacag tatcttcata tatccaagac ggcaaaagct 600  
 tgtttttatg agctggaaaa tacgaataat taggaatgat ggtgaatttt gatgggtggtt 660  
 aaattaacgg atgtagcaaa gcttgctggg gtgagccoga caacggtaag ccgctgatt 720  
 aataattatg gttatcttag tcaaaaaaca attgataaag ttcataagc gatggaagaa 780  
 ttaaattatc aacctaatgg attagccaga agcctccaag gaaaaagtac gcagctgatt 840  
 ggtttagtct tcccttctgt tagtcatcca ttttttggtg aattaattga aacactggaa 900  
 agaaagctct ttgttcaagg atataaagtg attttatgtg atagtgaaaa agatccagaa 960  
 aaagagcgcg cctattttacg aatgctcgct gcaaataaag tggacggtgt aatcactggt 1020  
 agccataact tagctattaa cgaatatgaa aatgtttcac tacctattgt ttcttttgac 1080  
 cgtttcttgg cacctggcat tccaattgtc tcttcgcaaa actttcaagg gggccaaaaa 1140  
 gccactgaag ccttatttgc aagtgggtgca caaaagattg caattattac tgggtgcta 1200  
 aacacaggcg cacctagcga ttatcgattg gctgggtata aacaaacaat ggaaaaatat 1260  
 ggcgcagaaa aaacgattct acaaattgat aatgggacct caacaacatt aaaaaatcta 1320  
 gaaatcgaac gtttgcttca aaataaaaact gtagacggca tcttttgtag agatgatttg 1380

acagcaatta cagttatgaa tattgctcaa aaattgaaga tatccattcc tgaagaatta	1440
aaagtaattg gttatgatgg gacaaaatta atcaaaagaa ttgccccaca actatcaacc	1500
attgtgcagc caatcgacga gatgtgtgac gttatgattg acttactgct tcgtagaatg	1560
aaggatcctg atgttgcact tgaggaaaat tatectattc cgattcagct atcattgtct	1620
gaatcctggt aaaaaagaca ccttttcagg tgtctttttt tattcttaat tcttcatttg	1680
cctattttcc ctttaattcca aagcacagag attaaataat acaacaacat gatccctaca	1740
aatacaccga gcattagtaa aacataccac caatttttgg cgctataggt ttcattttta	1800
tttttttcgg ttcgtttccc ggcagcccat ttccataaat cgtaattatt catctctctc	1860
accaccttta atgggtttat taacttaagc ctaacacgga atgagagAAC ttgaaaacaa	1920
aaggatcacc cgcttatgca atggatgac cttttttggg cactattctt ctgataaccc	1980
attattttta ataactgatt ggtaccaata aaaactatct tttttaatgc gtcgtaaattc	2040
ttttaactca tgggtctcac gattaacgta aataaaaccg tagcgttttt tgaatccttg	2100
atgggaactt aaaatatcca tgaccgacca agggcaatag ccaaacaact caacaccgtc	2160
agaaatagcc gcatgacaag cagcaatatg atcatgcaaa tacgcaattc gataatcatc	2220
atgaattttt cgcctctctg ttaggtgac tgggtgtgct aagccgtttt ctgtaatgat	2280
taacggcaaa cgggtattgac gataataatc atttaaaact aaacgtagac cagttggatc	2340
aatttgggca ccataacttag aggtttttta atgttgattt ttttcgattt taaaataacc	2400
gtatagatca aaatcaatgt ccttttcttt cgtacccaat ggggtgttgct catctgtcgg	2460
taaatagcta gcgactaacg tccgataata attagagcg ataaaatctg gtttagcggc	2520
tttcaaaatt gcttgatctt ctg	2543

<210> 5  
 <211> 981  
 <212> DNA  
 <213> *Enterococcus faecalis*

<400> 5	
atggtggtta aattaacgga tgtagcaaag cttgctgggg tgagcccgac aacggtaagc	60
cgcgtgatta ataattatgg ttatcttagt caaaaaacaa ttgataaagt tcatcaagcg	120
atggaagaat taaattatca acctaatgga ttagccagaa gcctccaagg aaaaagtacg	180
cagctgattg gtttagtctt ccttctgtt agtcatccat ttttgggtga attaatgaa	240
acactggaaa gaaagctctt tgttcaagga tataaagtga ttttatgtga tagtgaaaaa	300

gatccagaaa aagagcgcgc ctatttacga atgctcgctg caaataaagt ggacgggtgta 360  
atcactggta gccataactt agctattaac gaatatgaaa atgtttcact acctattggt 420  
tcctttgacc gtttcttggc acctggcatt ccaattgtct cttcgcaaaa ctttcaaggg 480  
ggccaaaaag cactgaagc cttatttgca agtgggtgcac aaaagattgc aattattact 540  
ggtgctaata acacaggcgc acctagcgat tatcgattgg ctggttataa acaaacaatg 600  
gaaaaatatg ggcagaaaa aacgattcta caaattgata atgggacctc aacaacatta 660  
aaaaatctag aaatcgaacg ttgtcttcaa aataaaaactg tagacggcat cttttgtaca 720  
gatgatttga cagcaattac agttatgaat attgctcaaa aattgaagat atccattcct 780  
gaagaattaa aagtaattgg ttatgatggg acaaaattaa tcaaaagaat tgccccacaa 840  
ctatcaacca ttgtgcagcc aatcgacgag atgtgtgacg ttatgattga cttactgctt 900  
cgtagaatga aggatcctga tgttgcactt gaggaaaatt atcctattcc gattcagcta 960  
tcattgtctg aatcctgtta a 981

<210> 6  
<211> 326  
<212> PRT  
<213> Enterococcus faecalis

<400> 6

Met Val Val Lys Leu Thr Asp Val Ala Lys Leu Ala Gly Val Ser Pro  
1 5 10 15

Thr Thr Val Ser Arg Val Ile Asn Asn Tyr Gly Tyr Leu Ser Gln Lys  
20 25 30

Thr Ile Asp Lys Val His Gln Ala Met Glu Glu Leu Asn Tyr Gln Pro  
35 40 45

Asn Gly Leu Ala Arg Ser Leu Gln Gly Lys Ser Thr Gln Leu Ile Gly  
50 55 60

Leu Val Phe Pro Ser Val Ser His Pro Phe Phe Gly Glu Leu Ile Glu  
65 70 75 80

Thr Leu Glu Arg Lys Leu Phe Val Gln Gly Tyr Lys Val Ile Leu Cys  
85 90 95

Asp Ser Glu Lys Asp Pro Glu Lys Glu Arg Ala Tyr Leu Arg Met Leu



100	105	110
Ala Ala Asn Lys Val Asp Gly Val Ile Thr Gly Ser His Asn Leu Ala		
115	120	125
Ile Asn Glu Tyr Glu Asn Val Ser Leu Pro Ile Val Ser Phe Asp Arg		
130	135	140
Phe Leu Ala Pro Gly Ile Pro Ile Val Ser Ser Gln Asn Phe Gln Gly		
145	150	155
Gly Gln Lys Ala Thr Glu Ala Leu Phe Ala Ser Gly Ala Gln Lys Ile		
165	170	175
Ala Ile Ile Thr Gly Ala Asn Asn Thr Gly Ala Pro Ser Asp Tyr Arg		
180	185	190
Leu Ala Gly Tyr Lys Gln Thr Met Glu Lys Tyr Gly Ala Glu Lys Thr		
195	200	205
Ile Leu Gln Ile Asp Asn Gly Thr Ser Thr Thr Leu Lys Asn Leu Glu		
210	215	220
Ile Glu Arg Leu Leu Gln Asn Lys Thr Val Asp Gly Ile Phe Cys Thr		
225	230	235
Asp Asp Leu Thr Ala Ile Thr Val Met Asn Ile Ala Gln Lys Leu Lys		
245	250	255
Ile Ser Ile Pro Glu Glu Leu Lys Val Ile Gly Tyr Asp Gly Thr Lys		
260	265	270
Leu Ile Lys Arg Ile Ala Pro Gln Leu Ser Thr Ile Val Gln Pro Ile		
275	280	285
Asp Glu Met Cys Asp Val Met Ile Asp Leu Leu Leu Arg Arg Met Lys		
290	295	300
Asp Pro Asp Val Ala Leu Glu Glu Asn Tyr Pro Ile Pro Ile Gln Leu		
305	310	315
Ser Leu Ser Glu Ser Cys		
325		

<210> 7  
 <211> 3064  
 <212> DNA  
 <213> *Enterococcus faecalis*

<400> 7  
 ctgcggcgtg caagcgattt tgtttatcac gctttgtcgg attgcaggga taccagccaa 60  
 atggcaatcg ggattatatg tttctacaca ttatacaggc tgtcatgatt gggcacaatt 120  
 ttatataaaa ccgtacggct ggctctttgc ggatttgtct tttggcggag gtgcttaccg 180  
 agacggggat agacagcggg ggaatcatta tttcggcaat ttagatgttt ttagaatggt 240  
 cgcaaatagt gagatccagg cagactttca gccggcaaaa atgcaattgc gtgcagaccc 300  
 aattgacaac cagcggggag aatttgagta cgaaaatgag ggcttgcctt acgcatgctt 360  
 gatagtttcg caagaacggc tttccatgga agagttgccg tttgattgac acataggggg 420  
 aatagtatga aaaagttaaa aatgatgggg attatgttat ttgttagtac ggtcttggtg 480  
 ggttgtggca caacagcaga aacaaaaata gacgagaaag caactgagaa aaccagtgtc 540  
 tcgaaaaaag ttttaaattt aatggagaac tcggaaatcg gttcaatgga ttctattttt 600  
 acacaagatg aagccagtat taacgcacag tccaatgtct ttgaagggtt atatcaattg 660  
 gatgaaaaag atcaactaat acctgctgct gctaaagaga tgccagaaat ttctgaggat 720  
 ggcaaacgat ataccattaa actaagagaa gatggcaagt ggtccaatgg tgatgctgta 780  
 acagccaatg atttcgtttt tgcttggcgt aaattagcga atccccaaaa ccaagccaat 840  
 tactttttct tgttagaagg aacgattctg aacggaacag ctattacaaa agaggaaaaa 900  
 gcaccagagg aattgggtgt caaagcgctt gatgattata ctttggagggt tacttttagaa 960  
 aagcctgtac catattttac gtcgttattg gcattttctc catttttccc acaaaacgaa 1020  
 gcattcgtga aagaaaaagg acaagcctat ggcacttcta gtgaaatgat tgtatctaata 1080  
 ggtccgtttt taatgaaaaa ttgggatcag tcagcgatgt cgtgggattt tgtgcgtaata 1140  
 ccctactatt acgataaaga aaaagtaaaa tcagaaacga ttcattttga agttcttaaa 1200  
 gaaaccaata ccgtttataa tttgtacgaa tcagggtgaat tagatgtggc tgtcttaaca 1260  
 ggagattttg ctaaacaaaa tcgagacaac ccagactatg aagcaatcga acggtcaaaa 1320  
 gtctattcct tacgttttaa ccaaaaaaga aacgaaaaac catccatttt tgcaaatgag 1380  
 aatgtccgca aagcttttagc ttatgctttg gataaaaaaa gtttagtcga taatatttta 1440  
 gcagatggct caaaagaaat ttatgggtac attccagaaa aatttgtata taaccagaa 1500

acgaatgaag attttcgtca agaagcaggc gctcttgtca aaacagacgc caaaaaagcc	1560
aaagagtatt tagataaagc aaaagcagag ctaaacggag atgtagccat tgaacttctt	1620
tcaagagatg gtgatagtga ccgaaaagtt gctgaattta tccaaggcca gttacaagaa	1680
acgttgcttg gtctcactat taatgtcaaa acagttcctt taaataatgc aattgaatta	1740
atgagaaaag gggattatga attgtctggt ggcattgtgg gacccgatta tcaggatcca	1800
atgactttct tagaaagctc agttagtggt aaccgtatga actattctag cccaacgttt	1860
gatcaactaa ttgaagaagc aacaactaaa tacgcaaatg agcctgaaac tcgttggtgaa	1920
acattaatta aagctgaaaa agtattggtg gaagaagatg ccgctttaat tcctttatac	1980
caagaggccc gtagtcagct tgtacgacca ggtgtcaaag gtattcagta tcataacttc	2040
ggtgcaacga gcacatataa gtatgcctat aaagaataaa ttagtgaaca aaagtacctt	2100
tagctgaagg tacttttttt ccgataagag cttctttttt gttaatagtc aacaattaat	2160
aaaaaataa ttgaaaaagg ttgacaaaaa taatgatact cgttagaata agcactgtta	2220
acaaatgaat agcgttttca tgtgactaga taatactagg catggaagaa tttcgttaata	2280
caatgtggtg tacaatgggt acgcaacatg tttaacggga ttgttctatg ctttttttgt	2340
tgttttctact gaaaatgtta gaattacttc tgcagaagag ggtcatttat gaaaattaaa	2400
aagggtgctaa atcaaaatgc tgtacttggt cttgacgaag gacaggagaa agtagctgtc	2460
ggtaaaggcg tcgggtttta taagactaaa aatgatgtct tatctcgaca attggtggag	2520
cggatgtttg tgatggagcc agaaggactg aaaaaacttc aagtactgct atcacaaatt	2580
gaagacaaat acttttttagg agtgaagaaa ttatccaaca tgctgaaacg gtattgggtg	2640
aaaagttgaa tgaacatatt aatattgggt tgagtgatca cattgctttt gcagctgaaa	2700
atattcaaaa taatattatt gttcggaaca agcttttaag tgaaattgag attttatata	2760
gtgaagaatt tgctattgct caatgggctg tagaatattt aacacaaacc ttagagattc	2820
catttagtta tgatgaagcg gggatatatt cgattcatat ccatagtgtc cgcagcgggc	2880
gtactgataa tagtaaaagt atccgtgaag ttacaatcgt ttctgaaatt attcatttaa	2940
tcgagcagga attggctatt gatattcatg atgataaaaa tagtctcagt tattcacgtt	3000
tggtgaatca tttaacgtttg ttatttcacg gcttccaaca aaatcaatac gctgttttag	3060
atga	3064

<211> 1653  
 <212> DNA  
 <213> Enterococcus faecalis

<400> 8  
 atgaaaaagt taaaaatgat ggggattatg ttatttggtta gtacgggtctt ggtaggttgt 60  
 ggcacaacag cagaaacaaa aatagacgag aaagcaactg agaaaaccag tgtctcgaaa 120  
 aaagttttta atttaatgga gaactcggaa atcgggttcaa tggattctat ttttacacaa 180  
 gatgaagcca gtattaacgc acagtccaat gtctttgaag gggtatatca attggatgaa 240  
 aaagatcaac taatacctgc tgctgctaaa gagatgccag aaatttctga ggatggcaaa 300  
 cgatatacca ttaaactaag agaagatggc aagtgggtcca atgggtgatgc tgtaacagcc 360  
 aatgatttctg tttttgcttg gcgtaaatta gcgaatccca aaaaccaagc caattacttt 420  
 ttcttggttag aaggaacgat tctgaacgga acagctatta caaaagagga aaaagcacca 480  
 gaggaattgg gtgtcaaagc gcttgatgat tatacttttg aggttacttt agaaaagcct 540  
 gtaccatatt ttacgtcgtt attggcattt tctccatttt tcccacaaaa cgaagcattc 600  
 gtgaaagaaa aaggacaagc ctatggcact tctagtgaag tgattgtatc taatgggtccg 660  
 tttttaatga aaaattggga tcagtcagcg atgtcgtggg attttggtgcg taatccctac 720  
 tattacgata aagaaaaagt aaaatcagaa acgattcatt ttgaagttct taaagaaacc 780  
 aataccgttt ataatttgta cgaatcaggt gaattagatg tggctgtctt aacaggagat 840  
 tttgctaaac aaaatcgaga caaccagac tatgaagcaa tcgaacgggtc aaaagtctat 900  
 tccttacggt taaacacaaa aagaaacgaa aaaccatcca tttttgcaaa tgagaatgtc 960  
 cgcaaagctt tagcttatgc tttggataaa aaaagtttag tcgataatat ttttagcagat 1020  
 ggctcaaaag aaatttatgg gtacattcca gaaaaatttg tatataacc agaaacgaat 1080  
 gaagattttc gtcaagaagc aggcgtctt gtcaaaacag acgcaaaaa agccaaagag 1140  
 tatttagata aagcaaaagc agagctaaac ggagatgtag ccattgaact tctttcaaga 1200  
 gatggtgata gtgaccgaaa agttgctgaa tttatccaag gccagttaca agaaacgttg 1260  
 cctgggtctc ctattaatgt caaaacagtt ccttttaata atgcaattga attaatagaga 1320  
 aaaggggatt atgaattgtc tggtggcatg tggggaccgg attatcagga tccaatgact 1380  
 ttcttagaaa gctcagttag tggtaaccgt atgaactatt ctagcccaac gtttgatcaa 1440  
 ctaattgaag aagcaacaac taaatacgca aatgagcctg aaactcgttg gcaaacatta 1500  
 attaaagctg aaaaagtatt ggtggaagaa gatgcgcgtt taattccttt ataccaagag 1560

gcccgtagtc agcttgtagc accaggtgtc aaaggtattc agtatcataa cttcggtgca 1620

acgagcacat ataagtatgc ctataaagaa taa 1653

<210> 9

<211> 550

<212> PRT

<213> Enterococcus faecalis

<400> 9

Met Lys Lys Leu Lys Met Met Gly Ile Met Leu Phe Val Ser Thr Val  
1 5 10 15

Leu Val Gly Cys Gly Thr Thr Ala Glu Thr Lys Ile Asp Glu Lys Ala  
20 25 30

Thr Glu Lys Thr Ser Val Ser Lys Lys Val Leu Asn Leu Met Glu Asn  
35 40 45

Ser Glu Ile Gly Ser Met Asp Ser Ile Phe Thr Gln Asp Glu Ala Ser  
50 55 60

Ile Asn Ala Gln Ser Asn Val Phe Glu Gly Leu Tyr Gln Leu Asp Glu  
65 70 75 80

Lys Asp Gln Leu Ile Pro Ala Ala Ala Lys Glu Met Pro Glu Ile Ser  
85 90 95

Glu Asp Gly Lys Arg Tyr Thr Ile Lys Leu Arg Glu Asp Gly Lys Trp  
100 105 110

Ser Asn Gly Asp Ala Val Thr Ala Asn Asp Phe Val Phe Ala Trp Arg  
115 120 125

Lys Leu Ala Asn Pro Lys Asn Gln Ala Asn Tyr Phe Phe Leu Leu Glu  
130 135 140

Gly Thr Ile Leu Asn Gly Thr Ala Ile Thr Lys Glu Glu Lys Ala Pro  
145 150 155 160

Glu Glu Leu Gly Val Lys Ala Leu Asp Asp Tyr Thr Leu Glu Val Thr  
165 170 175

Leu Glu Lys Pro Val Pro Tyr Phe Thr Ser Leu Leu Ala Phe Ser Pro

180	185	190
Phe Phe Pro Gln Asn Glu Ala	Phe Val Lys Glu Lys Gly Gln Ala Tyr	
195	200	205
Gly Thr Ser Ser Glu Met Ile Val Ser Asn Gly Pro Phe Leu Met Lys		
210	215	220
Asn Trp Asp Gln Ser Ala Met Ser Trp Asp Phe Val Arg Asn Pro Tyr		
225	230	235 240
Tyr Tyr Asp Lys Glu Lys Val Lys Ser Glu Thr Ile His Phe Glu Val		
245	250	255
Leu Lys Glu Thr Asn Thr Val Tyr Asn Leu Tyr Glu Ser Gly Glu Leu		
260	265	270
Asp Val Ala Val Leu Thr Gly Asp Phe Ala Lys Gln Asn Arg Asp Asn		
275	280	285
Pro Asp Tyr Glu Ala Ile Glu Arg Ser Lys Val Tyr Ser Leu Arg Leu		
290	295	300
Asn Gln Lys Arg Asn Glu Lys Pro Ser Ile Phe Ala Asn Glu Asn Val		
305	310	315 320
Arg Lys Ala Leu Ala Tyr Ala Leu Asp Lys Lys Ser Leu Val Asp Asn		
325	330	335
Ile Leu Ala Asp Gly Ser Lys Glu Ile Tyr Gly Tyr Ile Pro Glu Lys		
340	345	350
Phe Val Tyr Asn Pro Glu Thr Asn Glu Asp Phe Arg Gln Glu Ala Gly		
355	360	365
Ala Leu Val Lys Thr Asp Ala Lys Lys Ala Lys Glu Tyr Leu Asp Lys		
370	375	380
Ala Lys Ala Glu Leu Asn Gly Asp Val Ala Ile Glu Leu Leu Ser Arg		
385	390	395 400
Asp Gly Asp Ser Asp Arg Lys Val Ala Glu Phe Ile Gln Gly Gln Leu		
405	410	415

Gln Glu Thr Leu Pro Gly Leu Thr Ile Asn Val Lys Thr Val Pro Leu  
420 425 430

Asn Asn Ala Ile Glu Leu Met Arg Lys Gly Asp Tyr Glu Leu Ser Val  
435 440 445

Gly Met Trp Gly Pro Asp Tyr Gln Asp Pro Met Thr Phe Leu Glu Ser  
450 455 460

Ser Val Ser Gly Asn Arg Met Asn Tyr Ser Ser Pro Thr Phe Asp Gln  
465 470 475 480

Leu Ile Glu Glu Ala Thr Thr Lys Tyr Ala Asn Glu Pro Glu Thr Arg  
485 490 495

Trp Gln Thr Leu Ile Lys Ala Glu Lys Val Leu Val Glu Glu Asp Ala  
500 505 510

Ala Leu Ile Pro Leu Tyr Gln Glu Ala Arg Ser Gln Leu Val Arg Pro  
515 520 525

Gly Val Lys Gly Ile Gln Tyr His Asn Phe Gly Ala Thr Ser Thr Tyr  
530 535 540

Lys Tyr Ala Tyr Lys Glu  
545 550

<210> 10  
<211> 3498  
<212> DNA  
<213> Enterococcus faecalis

<400> 10  
aatcaatgaa atttaataaa aaagcttagt tagttgcatt cattgttcaa atcggttaca 60  
ctaagtaagt aaaaaaatat aatacaaggt tcgtcttcag gggcaggggtg taattcccga 120  
ccggtgggta tagtcacga ctggttttta acgattgaat tgggtgtaatt ccaataccga 180  
cagtatagtc tggataaaga agatagggct tatttgagac gctttttcat cagataatcc 240  
tactctatatt ttcctgcag aaaaataggg tttttttgta tgacaaagaa gcgaatcaaa 300  
aagttcgttg aagatgggtc cttaattgga ggatttcaga tgaacaacaa ggtacaaaaa 360  
atggtcagca ttgcaatggt ggccgcaatc ggtacagtat tacaatttgt ggcatttccg 420

attatgccgg	cgttttagttt	tttgaaaatc	gatttttagtg	atattccgat	tctactcgga	480
atgttccttg	acggaccgtt	agcaggagta	attactgctt	ttgttcgttc	gttgctacac	540
ctgttccttaa	ccggactagc	accgcaaaat	atggtgggag	atttcgctag	cttttttagca	600
agtagtatct	tcaccttgcc	aatttttttat	ttcttttgta	aaaagaaaaa	tatccgtaca	660
aatcggatag	tgggcttagt	aagtgggata	ttagccttga	caattttcat	gagtattgcg	720
aattattttg	tcattacacc	cattttactta	caattatatg	gtgtgaccac	acaacaattt	780
ttaggaacat	cttttagcaag	ctatgtggcg	attggtattg	tgccattcaa	ccttattaaa	840
ggcctcttag	tcagtgggtg	ttttctagta	ctacatgcga	agttattgcc	atggctatca	900
aaaaaacaac	atactattca	gaaaaaaaca	ccgttaacaa	aataaatgat	aaaaaacctg	960
ctgttgaaca	atgtttgaca	gtgggttttt	aaaatttacg	cctaaaagaa	aagaggttgt	1020
cataatctgt	catcattctg	ttaaaaaata	ctaaaccatc	tgcatgttaa	ttttaacttt	1080
cccttggtat	gatagaaatc	atcaaagaaa	gaggagtttt	cctgagtga	aaagtgtaaa	1140
aattgtcgtc	acgtgaatcg	tgatacggag	tccttttgtg	aagaatgcgg	cgctccgcta	1200
atgaatgaat	caatgcatca	agaggaaaac	caagcacaac	catcaatgaa	taaagggaac	1260
gaatctactc	ctctcagatc	aaaaagaagc	tggatctggg	cgtttctttt	tgtgttcata	1320
gttcttggag	cgggtagcta	ttttctcggg	acgcattatt	tttctaagga	acaacaaatt	1380
tcttatttta	ttgaagcgat	tgagaatggt	gatgcccaag	aattaagtaa	aaaaatgagg	1440
acgaacgagt	ctgaatttca	agtgaatccg	caaagcatta	agcctttaat	cacttattat	1500
caaaaaaatc	caactgagct	aaaaaaatta	gaaaaagcgc	tattaaagga	taaaaagtta	1560
catggtttaa	ctattcgtga	aacaagtcaa	acagcatttt	tctttcaccc	ttatcaattc	1620
attttaacgc	ctgtttctgt	tcagttaacg	acgaatcagc	gcggtgtgac	gctggcaatg	1680
aacgggcggg	aagtgggcac	ttccgactca	accacttata	aaaaggaatt	gggcccctta	1740
gcgccaggac	aatatacttt	tacagccaca	gtgaaagata	gcaccggcga	acctgttata	1800
acagaagagt	accgtttatt	agaagaggaa	aattatatat	ctagtattcc	tttagatttt	1860
aaacgaatga	attttgttgt	ggaaagcaat	ctgccagacg	cagatattta	tattaatgat	1920
cggaaagtgt	gtacgctaac	gaatggaagc	aaaacgattg	gccctttgtt	ctgggtccaaa	1980
gggatgacga	ttcaacttaa	aaagacgatt	aatggagaag	aaattcaaac	atcaaaagaa	2040
acgattgggtg	aaaatgattt	tgtcgaagcg	ctctccgata	atccaacgct	acaattgaat	2100



tttccgtag	ctagcgacta	tgatgccgc	aaagcgtag	aaaccttta	tcaagcattt	2160
gccaacaag	tgaaaagtca	tacggatagt	acagaatttg	ctaaaaaata	tctcgttggt	2220
ggggaaaata	atcctcaatt	tccttctttt	atagaagcac	ttgaacgatt	acgtgaaaag	2280
aaatcgaccg	atggttcacc	agattttgaa	gtgaccatta	atacgctaca	attggatggt	2340
aaagaaaatt	accatgtcaa	ttattattta	gaagccaaaa	attctaaagc	aaaagaaaat	2400
ggctctcggt	atgaatggat	caatggccta	aatgatcaaa	ttcatttagt	caaagaaccg	2460
ttaaaagaag	gacaattaca	gtttgtttcg	atagatgaac	aaacacttgc	ttggctcgaa	2520
aagatactct	aagcaaaaat	gagtgtctaa	ttatttagca	ctcatttttg	cttattttcta	2580
ttgcacgcgt	gggacatttg	cggtacgctt	ttaacacatt	ctcgcgttcg	ttttctggaa	2640
taaattggtg	tcgagcatgc	ggctcgtctt	taaaaggac	aatcccatga	tcatcataat	2700
caaatatatt	aggcgcataa	acttgacaaa	gtccacaagc	aatacatttt	tcaggaacta	2760
aacgtgattg	cataaacagt	gacacatcct	atctaaaaga	ggtttactat	ggaagcaact	2820
tttatttttag	cgttattatc	tcattggatac	aaggtacgtg	catcaacttt	gtatcatctt	2880
ttaaaaggca	aacggactag	ctctgttttg	atttatgggt	ttttatatga	ttgtttacgg	2940
ttcattggct	ggtggccaac	gatttcogaa	caagcctatt	ttcaatttct	tgaaaaactt	3000
tcgaaggcga	aacaaattca	gtatcacgaa	gagacaaatg	agattcaact	aacaaaagaa	3060
gggcaactat	ttttaaagga	gcaccatttt	tcgttgctgg	attatcctgc	aattgatctt	3120
tatcgttttg	gcagaagtga	tcgagaaagt	tggcaactca	ttcaatttgc	cgtgcaagtg	3180
acttcatatt	tatcatttga	ggaaaaacag	tatattccac	ttttatcaac	accgattccg	3240
caactatatt	tgaaacgatg	gttacaacaa	gacaagaaag	agcagcgcggt	tcaatcaatc	3300
aaagaagaac	tgttgcgagg	gtttgagtta	ctacctgaag	cagaaagcga	ctatttggtt	3360
gcgcaacttt	ctggttatca	gcaaaactggc	aaagttcctc	agcaattaac	aagccataag	3420
acagctcttg	aacagcgttt	gtggcacacg	caagcgggtc	atcatttact	gcagttgata	3480
atgtacggag	gaaattat					3498

<210> 11  
 <211> 1332  
 <212> DNA  
 <213> Enterococcus faecalis

<400> 11	
atgaatgaat	caatgcatca agaggaaaac caagcacaac catcaatgaa taaagggaac 60

```

gaatctactc ctctcagatc aaaaagaagc tggatctggg cgtttctttt tgtgttcatc 120
gttcttggag cgggtagcta ttttctcggg acgcattatt tttctaagga acaacaaatt 180
tcttatttta ttgaagcgat tgagaatggt gatgcccaag aattaagtaa aaaaatgagg 240
acgaacgagt ctgaatttca agtgaatccg caaagcatta agcctttaat cacttattat 300
caaaaaaatc caactgagct aaaaaaatta gaaaaagcgc tattaaagga taaaaagtta 360
catggtttta ctattcgtga aacaagtcaa acagcatttt tctttcacccg ttatcaattc 420
attttaacgc ctgtttctgt tcagttaacg acgaatcagc gcggtgtgac gctggcaatg 480
aacgggaggg aagtgggcac ttccgactca accacttatac aaaaggaatt gggcccctta 540
gcgccaggac aatatacttt tacagccaca gtgaaagata gcaccggcga acctgttatc 600
acagaagagt accgtttatt agaagaggaa aattatattt ctagtattcc tttagatttt 660
aaacgaatga attttggtgt ggaaagcaat ctgccagacg cagatattta tattaatgat 720
cggaaagtgt gtacgctaac gaatggaagc aaaacgattg gccctttgtt ctggtccaaa 780
gggatgacga ttcaacttaa aaagacgatt aatggagaag aaattcaaac atcaaaagaa 840
acgattggtg aaaatgattt tgtcgaagcg ctctccgata atccaacgct acaattgaat 900
tttccgttag ctagcgacta tgatgccgcg aaagcgctag aaacctttta tcaagcattt 960
gccaaacaag tgaaaagtca tacggatagt acagaatttg ctaaaaaata tctcgttggt 1020
ggggaaaata atcctcaatt tccttctttt atagaagcac ttgaacgatt acgtgaaaag 1080
aaatcgaccg atggttcacc agattttgaa gtgaccatta atacgctaca attggatggt 1140
aaagaaaatt accatgtcaa ttattattta gaagccaaaa attctaaagc aaaagaaaat 1200
gggtcttcgt atgaatggat caatggccta aatgatcaaa ttcatttagt caaagaaccg 1260
ttaaagaag gacaattaca gtttgtttcg atagatgaac aaacacttgc ttggctcgaa 1320
aagatactct aa 1332

```

```

<210> 12
<211> 443
<212> PRT
<213> Enterococcus faecalis

```

```
<400> 12
```

```

Met Asn Glu Ser Met His Gln Glu Glu Asn Gln Ala Gln Pro Ser Met
1           5           10          15

```

```

Asn Lys Gly Asn Glu Ser Thr Pro Leu Arg Ser Lys Arg Ser Trp Ile

```

20	25	30
Trp Ala Phe Leu Phe Val Phe Ile Val Leu Gly Ala Gly Ser Tyr Phe		
35	40	45
Leu Gly Thr His Tyr Phe Ser Lys Glu Gln Gln Ile Ser Tyr Phe Ile		
50	55	60
Glu Ala Ile Glu Asn Gly Asp Ala Gln Glu Leu Ser Lys Lys Met Arg		
65	70	75
Thr Asn Glu Ser Glu Phe Gln Val Asn Pro Gln Ser Ile Lys Pro Leu		
85	90	95
Ile Thr Tyr Tyr Gln Lys Asn Pro Thr Glu Leu Lys Lys Leu Glu Lys		
100	105	110
Ala Leu Leu Lys Asp Lys Lys Leu His Gly Leu Thr Ile Arg Glu Thr		
115	120	125
Ser Gln Thr Ala Phe Phe Phe His Arg Tyr Gln Phe Ile Leu Thr Pro		
130	135	140
Val Ser Val Gln Leu Thr Thr Asn Gln Arg Gly Val Thr Leu Ala Met		
145	150	155
Asn Gly Arg Glu Val Gly Thr Ser Asp Ser Thr Thr Tyr Gln Lys Glu		
165	170	175
Leu Gly Pro Leu Ala Pro Gly Gln Tyr Thr Phe Thr Ala Thr Val Lys		
180	185	190
Asp Ser Thr Gly Glu Pro Val Ile Thr Glu Glu Tyr Arg Leu Leu Glu		
195	200	205
Glu Glu Asn Tyr Ile Ser Ser Ile Pro Leu Asp Phe Lys Arg Met Asn		
210	215	220
Phe Val Val Glu Ser Asn Leu Pro Asp Ala Asp Ile Tyr Ile Asn Asp		
225	230	235
Arg Lys Val Gly Thr Leu Thr Asn Gly Ser Lys Thr Ile Gly Pro Leu		
245	250	255

Phe Trp Ser Lys Gly Met Thr Ile Gln Leu Lys Lys Thr Ile Asn Gly  
 260 265 270

Glu Glu Ile Gln Thr Ser Lys Glu Thr Ile Gly Glu Asn Asp Phe Val  
 275 280 285

Glu Ala Leu Ser Asp Asn Pro Thr Leu Gln Leu Asn Phe Pro Leu Ala  
 290 295 300

Ser Asp Tyr Asp Ala Arg Lys Ala Leu Glu Thr Phe Tyr Gln Ala Phe  
 305 310 315 320

Ala Lys Gln Val Lys Ser His Thr Asp Ser Thr Glu Phe Ala Lys Lys  
 325 330 335

Tyr Leu Val Gly Gly Glu Asn Asn Pro Gln Phe Pro Ser Phe Ile Glu  
 340 345 350

Ala Leu Glu Arg Leu Arg Glu Lys Lys Ser Thr Asp Gly Ser Pro Asp  
 355 360 365

Phe Glu Val Thr Ile Asn Thr Leu Gln Leu Asp Gly Lys Glu Asn Tyr  
 370 375 380

His Val Asn Tyr Tyr Leu Glu Ala Lys Asn Ser Lys Ala Lys Glu Asn  
 385 390 395 400

Gly Leu Arg Tyr Glu Trp Ile Asn Gly Leu Asn Asp Gln Ile His Leu  
 405 410 415

Val Lys Glu Pro Leu Lys Glu Gly Gln Leu Gln Phe Val Ser Ile Asp  
 420 425 430

Glu Gln Thr Leu Ala Trp Leu Glu Lys Ile Leu  
 435 440

<210> 13  
 <211> 3400  
 <212> DNA  
 <213> Enterococcus faecalis

<400> 13  
 aatttagata attgacgccg gccgcttcgg caactgtgac aatatcaaag ccagcaaaag 60

ctttttcttt taattcggtc agaaagtcac tcattcctgg catgtttcta ctagcttttg	120
ttactttggc taattgatct gcccacacag caggtaagtt tgtccaagtc aaatctttct	180
taataaaatt aatcgcatct acacgaaaac cagcaattcc tttgtttaac caaaaacgaa	240
tcatttgata gatttctttg cgtagttcag gattttccca atttaaattcc ggctgttttt	300
tatgaaaggc atgaaagtag taggcattct cccacaggtaa tttttcccaa acactaccac	360
cgaagttaga ccgccaattt gtaggtgctt ctgcgtcttc ttttataata taaaagtctc	420
gaaaacgact ttgaggattt tttaaaacat cttgaaacca agcatgttca tcagatgtat	480
ggtttaccac caaatctaaa ataactttta tgtttcggtt ttttgcttct tcaatgagtt	540
catcgaagtc tgccattgta ccaaaatcgc tagaaatacc ataatagtct gaaatatcat	600
atccattgtc agccattggc gacgggtaca ttggactcag ccaaatcagc gtaattccta	660
aattttctaa gtaatccagt ttttgaataa tgccttgtaa atcaccaatt ccgtcattat	720
tactatccga aaagctacgt ggataaattt gataggccac ttctttttgc caccaatttc	780
tgttcattct ggttctcttc actcttaaac tagtctgtt aattttttct gtaaccgttt	840
ttacattttg tatgatactc gtttttgctt aatatgtcaa acgtttatca taaataaatg	900
taaattataa tattcttttg atttaaatag atttatatat gttatacgtt tgactttttt	960
ctgatttggt tatactatta gactaactac tattttctaa taaaggagac attacttatg	1020
tcaagcatca tgaaccaatg gacggatgaa ttacgttatg cgccttattc ttcttgga	1080
tctgctcacc tcgaaaatct aacttctatt atcgcgcaat ctagttggcg ttttaagtat	1140
catattcaac cacagacagg actactaaat gatcccaacg gtttttcgta tttcaataac	1200
cagtggcatt tattttatca agcgtttcct ttccggagtg ttcacggact aaaaagttgg	1260
gcccacttaa ctctctccga cttaattcac tgggattatg aaggaattgc cctttatccc	1320
gactctgaat atgattctca tggcgtctat tcaggctcag cttaacaat agataaccaa	1380
ctatgtttat tttatacagg aaatgttcgt gatcaaactt ggcaacgatt tgcatatcaa	1440
aatattgcat ggctgaattc tttaggtgcg atcacaaggt aatcaacacc attcctacct	1500
attgaccca attattcttc ccattttcgt gatccgatgg tatttcctta tcaagaagga	1560
cttgttttat taattggtgc tagtgattta aatggacaag gaaaaattgt ggtctatttt	1620
tctaaagatc gaaatgtaca caattttcat caacttggcg aattgacgtt caccaaccaa	1680
gaattaggct acatggttga atgcccacat ttggtattta ttgatggcca gcctgtctta	1740

ttatTTTTGCC cacaaggtct atctccatct gtaaaaagtt atcagaatat ctatccgaat	1800
atgtacacat tggccgaaac gtttgatttg gagaatcttt ctttagttca ggctgggcct	1860
tttgaaaatt tagatgaagg atttgatgtc tacgccactc aagcctttaa tgcgccagat	1920
ggtcgtgcac ttgcggtcag ttggattggg ttgccagaaa tcacttacc c aagtgatgtg	1980
gagggttggg caaatggctt aagtctgggt aaagaactca caattcaca c cgggaaacta	2040
tttcaatatc cagtttctga aacagaaatg cttcgtcaat ccgctactac tttatcaa t	2100
ggctgccatt tcttatctac tgcttctttt gaattagaag tggatattcc caaaaatgag	2160
attgctttta ttcggtttt agcgaacgaa acgggttcaa aaggactttt aattacaatt	2220
gatacgattc atggtaaaat aacccttgat cgaacatttg ctggccaatc ttttgctgaa	2280
aagtatggca caattcgtga aactaaaatt aggaaaaata agtcagttca gttaactatt	2340
tttgttgatt gctctgttgc agaaatctat gtaaataaag gtgaaaaaac gatgactgg t	2400
cgcttctttc cagataaagc gcaacagtat cttcatctat ccaagacggc aaaagcttgt	2460
ttttatgagc tggaaaatac gaataattag gaatgatggg gaattttgat ggtggttaaa	2520
ttaacggatg tagcaaagct tgctgggggtg agcccgacaa cggtaagccg cgtgattaat	2580
aattatgggt atcttagtca aaaaacaatt gataaagttc atcaagcgat ggaagaatta	2640
aattatcaac ctaatggatt agccagaagc ctccaaggaa aaagtacgca gctgattgg t	2700
ttagtcttcc cttctgttag tcatccattt tttggtgaat taattgaaac actggaaaga	2760
aagctctttg ttcaaggata taaagtgatt ttatgtgata gtgaaaaaga tccagaaaaa	2820
gagcgcgcct atttacgaat gtcgctgca aataaagtgg acggtgtaat cactggtagc	2880
cataacttag ctattaacga atatgaaaat gtttcactac ctattgtttc ctttgaccgt	2940
ttcttggcac ctggcattcc aattgtctct tcgcaaaact ttcaaggggg ccaaaaagcc	3000
actgaagcct tatttgcaag tggtgacaaa aagattgcaa ttattactgg tgctaataac	3060
acaggcgcac ctagcgatta tcgattggct gggtataaac aaacaatgga aaaatatggc	3120
gcagaaaaaa cgattctaca aattgataat gggacctcaa caacattaaa aaatctagaa	3180
atcgaacgtt tgcttcaaaa taaaactgta gacggcatct tttgtacaga tgatttgaca	3240
gcaattacag ttatgaatat tgctcaaaaa ttgaagatat ccattcctga agaattaaaa	3300
gtaattgggt atgatgggac aaaattaatc aaaagaattg cccacaaact atcaaccatt	3360
gtgcagccaa tcgacgagat gtgtgacgtt atgattgact	3400

<210> 14  
 <211> 1473  
 <212> DNA  
 <213> *Enterococcus faecalis*

<400> 14  
 atgtcaagca tcatgaacca atggacggat gaattacggt atgcgcctta ttcttcttgg 60  
 acatctgctc acctcgaaaa tctaacttct attatcgcg aatctagttg gcgttttaag 120  
 tatcatattc aaccacagac aggactacta aatgatocca acggtttttc gtatttcaat 180  
 aaccagtggc atttatttta tcaagcggtt cctttcgggg gtgttcacgg actaaaaagt 240  
 tgggcccact taacttctc cgacttaatt cactgggatt atgaaggaat tgccctttat 300  
 cccgactctg aatatgattc tcatggcgct tattcaggct cagctttaac aatagataac 360  
 caactatggt tattttatac aggaaatggt cgtgatcaaa cttggcaacg atttgcatat 420  
 caaaatattg catggctgaa ttcttttaggt gcgatcacia aggaatcaac accattccta 480  
 cctattgacc ccaattattc ttcccatttt cgtgatccga tggatatttc ttatcaagaa 540  
 ggacttggtt tattaattgg tgctagtgat ttaaattggc aaggaaaaat tgtggtctat 600  
 ttttctaaag atcgaaatgt acacaatttt catcaacttg gcgaattgac gttcaccaac 660  
 caagaattag gctacatggt tgaatgcccc aatttggtat ttattgatgg ccagcctgtc 720  
 ttattatttt gccacaaagg tctatctcca tctgtaaaaa gttatcagaa tatctatccg 780  
 aatatgtaca cattggccga aacgtttgat ttggagaatc tttctttagt tcaggctggg 840  
 ccttttgaaa atttagatga aggatttgat gtctacgcca ctcaagcctt taatgcgcca 900  
 gatggtcgtg cacttgcggt cagttggatt ggggtgccag aaatcactta cccaagtgat 960  
 gtggagggtt gggcaaattg cttaagtctg gttaaagaac tcacaattca caacgggaaa 1020  
 ctatttcaat atccagtttc tgaaacagaa atgcttcgtc aatccgctac tactttatca 1080  
 aatggctgcc atttcttatt tactgcttct tttgaattag aagtggatat tccccaaat 1140  
 gagattgctt ttattcggct tttagcgaac gaaacgggtt caaaaggact tttaattaca 1200  
 attgatacga ttcattggtt aataaccctt gatcgaacat ttgctggcca atcttttgct 1260  
 gaaaagtatg gcacaattcg tgaaactaaa attaggaaaa ataagtcagt tcagttaact 1320  
 atttttgttg attgctctgt tgcagaaatc tatgtaaata aaggtgaaaa aacgatgact 1380  
 ggtcgcttct ttcagataa agcgcaacag tatcttcac tatccaagac ggcaaaagct 1440  
 tgtttttatg agctggaaaa tacgaataat tag 1473

<210> 15  
 <211> 490  
 <212> PRT  
 <213> Enterococcus faecalis

<400> 15

Met Ser Ser Ile Met Asn Gln Trp Thr Asp Glu Leu Arg Tyr Ala Pro  
 1 5 10 15

Tyr Ser Ser Trp Thr Ser Ala His Leu Glu Asn Leu Thr Ser Ile Ile  
 20 25 30

Ala Gln Ser Ser Trp Arg Phe Lys Tyr His Ile Gln Pro Gln Thr Gly  
 35 40 45

Leu Leu Asn Asp Pro Asn Gly Phe Ser Tyr Phe Asn Asn Gln Trp His  
 50 55 60

Leu Phe Tyr Gln Ala Phe Pro Phe Gly Ser Val His Gly Leu Lys Ser  
 65 70 75 80

Trp Ala His Leu Thr Ser Ser Asp Leu Ile His Trp Asp Tyr Glu Gly  
 85 90 95

Ile Ala Leu Tyr Pro Asp Ser Glu Tyr Asp Ser His Gly Val Tyr Ser  
 100 105 110

Gly Ser Ala Leu Thr Ile Asp Asn Gln Leu Cys Leu Phe Tyr Thr Gly  
 115 120 125

Asn Val Arg Asp Gln Thr Trp Gln Arg Phe Ala Tyr Gln Asn Ile Ala  
 130 135 140

Trp Leu Asn Ser Leu Gly Ala Ile Thr Lys Glu Ser Thr Pro Phe Leu  
 145 150 155 160

Pro Ile Asp Pro Asn Tyr Ser Ser His Phe Arg Asp Pro Met Val Phe  
 165 170 175

Pro Tyr Gln Glu Gly Leu Val Leu Leu Ile Gly Ala Ser Asp Leu Asn  
 180 185 190

Gly Gln Gly Lys Ile Val Val Tyr Phe Ser Lys Asp Arg Asn Val His  
 195 200 205



Asn Phe His Gln Leu Gly Glu Leu Thr Phe Thr Asn Gln Glu Leu Gly  
 210 215 220

Tyr Met Val Glu Cys Pro Asn Leu Val Phe Ile Asp Gly Gln Pro Val  
 225 230 235 240

Leu Leu Phe Cys Pro Gln Gly Leu Ser Pro Ser Val Lys Ser Tyr Gln  
 245 250 255

Asn Ile Tyr Pro Asn Met Tyr Thr Leu Ala Glu Thr Phe Asp Leu Glu  
 260 265 270

Asn Leu Ser Leu Val Gln Ala Gly Pro Phe Glu Asn Leu Asp Glu Gly  
 275 280 285

Phe Asp Val Tyr Ala Thr Gln Ala Phe Asn Ala Pro Asp Gly Arg Ala  
 290 295 300

Leu Ala Val Ser Trp Ile Gly Leu Pro Glu Ile Thr Tyr Pro Ser Asp  
 305 310 315 320

Val Glu Gly Trp Ala Asn Gly Leu Ser Leu Val Lys Glu Leu Thr Ile  
 325 330 335

His Asn Gly Lys Leu Phe Gln Tyr Pro Val Ser Glu Thr Glu Met Leu  
 340 345 350

Arg Gln Ser Ala Thr Thr Leu Ser Asn Gly Cys His Phe Leu Ser Thr  
 355 360 365

Ala Ser Phe Glu Leu Glu Val Asp Ile Pro Lys Asn Glu Ile Ala Phe  
 370 375 380

Ile Arg Leu Leu Ala Asn Glu Thr Gly Ser Lys Gly Leu Leu Ile Thr  
 385 390 395 400

Ile Asp Thr Ile His Gly Lys Ile Thr Leu Asp Arg Thr Phe Ala Gly  
 405 410 415

Gln Ser Phe Ala Glu Lys Tyr Gly Thr Ile Arg Glu Thr Lys Ile Arg  
 420 425 430

Lys Asn Lys Ser Val Gln Leu Thr Ile Phe Val Asp Cys Ser Val Ala  
435 440 445

Glu Ile Tyr Val Asn Lys Gly Glu Lys Thr Met Thr Gly Arg Phe Phe  
450 455 460

Pro Asp Lys Ala Gln Gln Tyr Leu His Leu Ser Lys Thr Ala Lys Ala  
465 470 475 480

Cys Phe Tyr Glu Leu Glu Asn Thr Asn Asn  
485 490

<210> 16  
<211> 2089  
<212> DNA  
<213> Enterococcus faecalis

<400> 16  
ccgcggctgt ggggtgtatcg ggattggcga gcgcaagaag cgacgctttc ttatttagat 60  
tttcggttat atcaaatcca acaaatttgg caagaaaagg agtgagtgtt gttgacatta 120  
gaacaagaat tattcactca atttggttac gcagcgttta agcctgggtca aaaagaagtg 180  
attacaaact tacttgacgg tatgaatata ttggctgttt tgccaacagg gactggaaaa 240  
tcattgtgtt atcaatttgt gggccagaag ttagagggac taacggtaat tgtttctccc 300  
ttactttcgt taatggaaga tcagatgcgt caattacaaa gacaaggaat taaagggtcg 360  
gttgcccttaa acagtacgtt acagtattca gaaaagcgtt atatttttagc gaaaatgttc 420  
caatacgatt atctgttttt aagcccagaa atgcttttgc agcaagaagt acttagtgtg 480  
ttacaacgcc aaaaaattgc attatttgtg gtggatgaag ccatttgtgt ttatcagtgg 540  
ggcgtcgatt ttcgccctga atatagtaaa ttagatctgg tccaaaaaca gctagacttt 600  
cctttgacct tggcggttaac tgccacagcg acaccggtt tacagcacgc aattataaaa 660  
caattatttt ctcatggcag ctatcaagaa gttctttctt cagtgaatcg aaaaaatatt 720  
ggcttggtcg tgaaggaaac gtcagaaaaa gaagaagtgt tactagatta cttatctaaa 780  
acggctggta aaatcattat ctattgcgcc acgcgcaaca aaacagaaca aatcagtcaa 840  
cttattcagg caaaaaccag ttttaaggta gcctattatc atggggggctt ggaggctagt 900  
gaacgtagtc gcttgcaaga acaatttatt gataatcaaa tcgatattct ttgtgcaacg 960  
aatgcttttg ggatgggaat cgacaaacct gatgttcgtg gagtgattca ttttgatttg 1020

cctgatagct tagaaaatta cctgcaagaa atcggggcgag ctggacgtga tgggtcaaaaa	1080
agttggggcgc tattattgta taaaaaaggg gatgaattta ttcacgcggtt tttcttagaa	1140
gagacaagag cgaatcgagc gaccttaaaa tcgctgattg aaggagaaga acaagcaggt	1200
ttgctagaaa atgccaccga gttacaacaa aaatgggtcc aaggctattt agccaaggat	1260
tattcttttg aagagctaga gcatcgttta gaggagaaag aaaaagatcg ccaagcacia	1320
ttaagagggga tgctgacgta tattgaaacc acaacctgtc gaagaacggt gattcaaact	1380
tattttcaag aaccgattgt caaacaatca ccggaaactt gttgtgataa ttgtgcgtta	1440
ttctttgaca tttaaccaaga ttcaatagta aaatcgaaca agaccagcaa tcaaatgaa	1500
gaaggttggc gttctaaatt tctaaaatta tttaaagaac gtgattaatt cattttttta	1560
gtcggcagtt ggcaaaagct atgatataat aacaagcgag agaagtttag gaggaaatta	1620
gcagtgagta aaaaggacaa aaagaaaaac caagctcgtg agccatggga acaatcaatt	1680
tatgaacctg atcaaatgg tgggtggttct cgtttagcaa aacgccaaca gcaacgagga	1740
aattcattat ttctaactgt tttagttatt ttgctattat taattattgc cattccaatt	1800
gggactttct tatggatgat gcaagacaag aaaccgaacg aaagtgctag caaaaatagc	1860
cagccatctt cttcattagt ccaatcatca tcaaaagaga agaaaaaaga aagtacgtca	1920
aatcagtggt aaagctcaga accagcaagc agccaaccag ctgaaaatac aacaccttca	1980
agttcagatg ctgctgcaca gcaacaacag gaccaacaag cacaacaaca gcaacagcaa	2040
caacaagagc agcaacaaca acaagaagct caaatcaac aacagcaac	2089

<210> 17  
 <211> 1347  
 <212> DNA  
 <213> Enterococcus faecalis

<400> 17	
atgaatacat tggctgtttt gccaacaggg actggaaaat cattgtgtta tcaatttgtg	60
ggccagaagt tagagggact aacggtaatt gtttctccct tactttcggt aatggaagat	120
cagatgcgtc aattacaaag acaaggaatt aaaggtgcgg ttgccttaaa cagtacgtta	180
cagtattcag aaaagcggtta tatttttagcg aaaatgttcc aatacgatta tctgttttta	240
agcccagaaa tgcttttgca gcaagaagta cttagtgtgt tacaacgcca aaaaattgca	300
ttatttgtgg tggatgaagc ccattgtgtt tatcagtggg gcgtcgattt tcgccctgaa	360
tatagtaa at tagatctggt ccaaaaacag ctagactttc ctttgacctt ggcgttaact	420

gccacagcga caccggttgt acagcacgca attataaaac aattattttc tcatggcagc 480  
tatcaagaag ttctttcttc agtgaatcga aaaaatattg gcttggtcgt gaaggaaacg 540  
tcagaaaaag aagaagtgtt actagattac ttatctaaaa cggctggtaa aatcattatc 600  
tattgcgcca cgcgcaacaa aacagaacaa atcagtcaac ttattcaggc aaaaaccagt 660  
tttaaggtag cctattatca tgggggcttg gaggctagtg aacgtagtcg cttgcaagaa 720  
caatttattg ataatcaa atcgatattctt tgtgcaacga atgcttttgg gatgggaatc 780  
gacaaacctg atgttcgtgg agtgattcat tttgatttgc ctgatagctt agaaaattac 840  
ctgcaagaaa tcgggcgagc tggacgtgat ggtcaaaaaa gttgggcgct attattgtat 900  
aaaaaagggg atgaatttat tcatcggttt ttcttagaag agacaagagc gaatcgagcg 960  
accttaaaat cgctgattga aggagaagaa caagcagggt tgctagaaaa tgccaccgag 1020  
ttacaacaaa aatgggtcca aggctattta gccaggatt attcttttga agagctagag 1080  
catcgtttag aggagaaaga aaaagatcgc caagcacaat taagagggat gctgacgtat 1140  
attgaaacca caacctgtcg aagaacgttg attcaaactt attttcaaga accgattgtc 1200  
aaacaatcac cggaaacttg ttgtgataat tgtgcgttat tctttgacat ttaccaagat 1260  
tcaatagtaa aatcgaacaa gaccagcaat caaatgaag aagggtggcg ttctaaattt 1320  
ctaaaattat ttaaagaacg tgattaa 1347

<210> 18  
<211> 448  
<212> PRT  
<213> Enterococcus faecalis

<400> 18

Met Asn Thr Leu Ala Val Leu Pro Thr Gly Thr Gly Lys Ser Leu Cys  
1 5 10 15

Tyr Gln Phe Val Gly Gln Lys Leu Glu Gly Leu Thr Val Ile Val Ser  
20 25 30

Pro Leu Leu Ser Leu Met Glu Asp Gln Met Arg Gln Leu Gln Arg Gln  
35 40 45

Gly Ile Lys Gly Ala Val Ala Leu Asn Ser Thr Leu Gln Tyr Ser Glu  
50 55 60

Lys Arg Tyr Ile Leu Ala Lys Met Phe Gln Tyr Asp Tyr Leu Phe Leu

65		70		75		80									
Ser	Pro	Glu	Met	Leu	Leu	Gln	Gln	Glu	Val	Leu	Ser	Val	Leu	Gln	Arg
			85					90						95	
Gln	Lys	Ile	Ala	Leu	Phe	Val	Val	Asp	Glu	Ala	His	Cys	Val	Tyr	Gln
			100					105					110		
Trp	Gly	Val	Asp	Phe	Arg	Pro	Glu	Tyr	Ser	Lys	Leu	Asp	Leu	Val	Gln
		115					120					125			
Lys	Gln	Leu	Asp	Phe	Pro	Leu	Thr	Leu	Ala	Leu	Thr	Ala	Thr	Ala	Thr
		130					135					140			
Pro	Val	Val	Gln	His	Ala	Ile	Ile	Lys	Gln	Leu	Phe	Ser	His	Gly	Ser
145					150					155					160
Tyr	Gln	Glu	Val	Leu	Ser	Ser	Val	Asn	Arg	Lys	Asn	Ile	Gly	Leu	Phe
			165						170					175	
Val	Lys	Glu	Thr	Ser	Glu	Lys	Glu	Glu	Val	Leu	Leu	Asp	Tyr	Leu	Ser
			180					185						190	
Lys	Thr	Ala	Gly	Lys	Ile	Ile	Ile	Tyr	Cys	Ala	Thr	Arg	Asn	Lys	Thr
		195					200					205			
Glu	Gln	Ile	Ser	Gln	Leu	Ile	Gln	Ala	Lys	Thr	Ser	Phe	Lys	Val	Ala
		210					215					220			
Tyr	Tyr	His	Gly	Gly	Leu	Glu	Ala	Ser	Glu	Arg	Ser	Arg	Leu	Gln	Glu
225					230					235					240
Gln	Phe	Ile	Asp	Asn	Gln	Ile	Asp	Ile	Leu	Cys	Ala	Thr	Asn	Ala	Phe
			245						250					255	
Gly	Met	Gly	Ile	Asp	Lys	Pro	Asp	Val	Arg	Gly	Val	Ile	His	Phe	Asp
			260					265					270		
Leu	Pro	Asp	Ser	Leu	Glu	Asn	Tyr	Leu	Gln	Glu	Ile	Gly	Arg	Ala	Gly
		275					280					285			
Arg	Asp	Gly	Gln	Lys	Ser	Trp	Ala	Leu	Leu	Leu	Tyr	Lys	Lys	Gly	Asp
	290					295					300				

Glu Phe Ile His Arg Phe Phe Leu Glu Glu Thr Arg Ala Asn Arg Ala  
 305 310 315 320

Thr Leu Lys Ser Leu Ile Glu Gly Glu Glu Gln Ala Gly Leu Leu Glu  
 325 330 335

Asn Ala Thr Glu Leu Gln Gln Lys Trp Val Gln Gly Tyr Leu Ala Lys  
 340 345 350

Asp Tyr Ser Phe Glu Glu Leu Glu His Arg Leu Glu Glu Lys Glu Lys  
 355 360 365

Asp Arg Gln Ala Gln Leu Arg Gly Met Leu Thr Tyr Ile Glu Thr Thr  
 370 375 380

Thr Cys Arg Arg Thr Leu Ile Gln Thr Tyr Phe Gln Glu Pro Ile Val  
 385 390 395 400

Lys Gln Ser Pro Glu Thr Cys Cys Asp Asn Cys Ala Leu Phe Phe Asp  
 405 410 415

Ile Tyr Gln Asp Ser Ile Val Lys Ser Asn Lys Thr Ser Asn Gln Asn  
 420 425 430

Glu Glu Gly Trp Arg Ser Lys Phe Leu Lys Leu Phe Lys Glu Arg Asp  
 435 440 445

<210> 19  
 <211> 2096  
 <212> DNA  
 <213> Enterococcus faecalis

<400> 19  
 tacttttagct tctcaaaagc tccatacgag tcaaccttat ttaagtaccc agctcaagga 60  
 gttggaacgt gaattaggtg cttcattaat tttaagagac aagaaacatt gtcggctttc 120  
 tccagcaggc gaagtcgtcg ccaagcgaac agaaatgatt tttgcactca ttaaggaagc 180  
 gcaagaagag attaataaat tagtgaccca aggatcgaca acgaccattc ggattggaac 240  
 aaacttaatt gatataagata aagcatttgg agaagtcttg ttgttattta atcaatccta 300  
 tccgtatgta agtattgatt ttaagtatta ttacgatctt gaaacagcct tggaacaga 360  
 tttaattgac attgggattg ggatatTTTT ggatacctcg attccattag agaaagaatt 420

aatttataca gaaagctatc tcctttgtgt caataaaaat catcctttag cccatgccga	480
tagcgtgacg attgacgaaa ttcgttcttt accttttgct gcatattccg atcaagtata	540
tgaaaaaaaa gtgttcaaac gttgggaacg taaaatcaat tgggaaaatc ggcaaatcgt	600
catogaactt ccttctcttc atttagtctt agacatggtc caacgagaaa aagcctgtag	660
catccttccc tattcactca ctgatgaact aaacagacgt aacttagttg gtattcctct	720
ggaagatagt ccagaacgag ccatctatctt agttcagaat aatcatcacg gacattgtga	780
agcacaccgt tatttattcg aacaattacg ttattttattc taggaataga aaaaggagga	840
attcccatgg aactatttcg ttacattat ttttttagagt tatgcaaagt gaaacaattt	900
actaaagcag ccgaaaattt agcaatttct caagctgcat taagtaagca aataaaaatt	960
cttgaagcaa cgttaggcgc ggaacttttt aatcgccaag gccaaactac caccttaacg	1020
ccagctggat taattttaga aaaatattgt tggcgcatca ccaatgagtt ggtctcaatt	1080
gaagaagagc taaaagaaat taatcattct tccaaccata tttatgtggc cacttatctc	1140
tgtgatttag aatataaatt gaatgactta ctaatgacaa cattaacgga tcgttcatcc	1200
aacttacaag tccacactat tattacagaa aatattcttc aatccttgga aacaatggat	1260
gcagattttg gtatttctct tgctgactta ccattacctg aacatattgg taaaattgat	1320
ttatttacag caaattatca attcatttta agaaacgac atccagcttt ggcaaaagcc	1380
acgacggaag aaattttaaa agaactaaca atgtaccctc tcgtccgttt aaataccgaa	1440
ttttccgagc aaaacaaatt aaccaattgg ctagatacta cgttttctaa tttttctcca	1500
gagaaagtca ttcaagtgga tactctttca cttattactc acttgggtgtc tcattccgat	1560
agtttcgcta ttgtccccga atacacaaat attcaacttt tagacaattc gatccataca	1620
ctaacttacc aagaactacc taaacgaaac atggcagttt attatttaaa agaacgttac	1680
atgagtcgac aacttcaaca acttttggct gaatgccaaa aacaatttca atagtaaaaa	1740
ccaagactag agcttgtcgg caagcgagtt ccagtcttgg tttttatttg tgttttcagg	1800
tagcggcttc tcttcttttg acaaatccta aagaagtgat agccatcact aacgaagtgc	1860
ctccttgact taaaaacgga agcggaatac cttttaacgg caacagtcca atcaccgcac	1920
cgatattctc caccgtttga aagaccagcg aaaaaatgag ggcgacacag atgtacatac	1980
aaaaacgcga attgctccgc aagccagcta ctaaaacttg ataaaacaag taaaaataga	2040
gaaaaacaac ggtggcactg cccacaaagc cccaggcttc cccgataaaa gtaaaa	2096

<210> 20  
 <211> 888  
 <212> DNA  
 <213> Enterococcus faecalis

<400> 20  
 atggaactat ttcgtttaca ttatttttta gagttatgca aagtgaaca atttactaaa 60  
 gcagccgaaa atttagcaat ttctcaagct gcattaagta agcaaataaa aattcttgaa 120  
 gcaacggttag ggcgcggaact ttttaatcgc caaggccaaa ctaccacctt aacgccagct 180  
 ggattaatatt tagaaaaata ttgttggcgc atcaccaatg agttggtctc aattgaagaa 240  
 gagctaaaag aaattaatca ttcttccaac catatttatg tggccactta tctctgtgat 300  
 ttagaatata aattgaatga cttactaatg acaacattaa cggatcgttc atccaactta 360  
 caagtccaca ctattattac agaaaatatt cttcaatcct tggaaacaat ggatgcagat 420  
 tttggtatatt cctttgctga cttaccatta cctgaacata ttggtaaaat tgatttatatt 480  
 acagcaaatt atcaattcat ttaagaaac gatcatccag ctttggcaaa agccacgacg 540  
 gaagaaatatt taaaagaact aacaatgtac ccttcgtcc gtttaaatac cgaattttcc 600  
 gagcaaaaca aattaaccaa ttggctagat actacgtttt ctaatttttc tccagagaaa 660  
 gtcattcaag tggatactct ttcacttatt actcacttgg tgtctcattc cgatagtttc 720  
 gctattgtcc ccgaatacac aaatattcaa cttttagaca attcgatcca tacactaact 780  
 taccaagaac tacctaaacg aaacatggca gtttattatt taaaagaacg ttacatgagt 840  
 cgacaacttc aacaactttt ggctgaatgc caaaaacaat ttcaatag 888

<210> 21  
 <211> 294  
 <212> PRT  
 <213> Enterococcus faecalis

<400> 21  
 Met Glu Leu Phe Arg Leu His Tyr Phe Leu Glu Leu Cys Lys Val Lys  
 1 5 10 15  
 Gln Phe Thr Lys Ala Ala Glu Asn Leu Ala Ile Ser Gln Ala Ala Leu  
 20 25 30  
 Ser Lys Gln Ile Lys Ile Leu Glu Ala Thr Leu Gly Ala Glu Leu Phe  
 35 40 45



Asn Arg Gln Gly Gln Thr Thr Thr Leu Thr Pro Ala Gly Leu Ile Leu  
50 55 60

Glu Lys Tyr Cys Trp Arg Ile Thr Asn Glu Leu Val Ser Ile Glu Glu  
65 70 75 80

Glu Leu Lys Glu Ile Asn His Ser Ser Asn His Ile Tyr Val Ala Thr  
85 90 95

Tyr Leu Cys Asp Leu Glu Tyr Lys Leu Asn Asp Leu Leu Met Thr Thr  
100 105 110

Leu Thr Asp Arg Ser Ser Asn Leu Gln Val His Thr Ile Ile Thr Glu  
115 120 125

Asn Ile Leu Gln Ser Leu Glu Thr Met Asp Ala Asp Phe Gly Ile Ser  
130 135 140

Phe Ala Asp Leu Pro Leu Pro Glu His Ile Gly Lys Ile Asp Leu Phe  
145 150 155 160

Thr Ala Asn Tyr Gln Phe Ile Leu Arg Asn Asp His Pro Ala Leu Ala  
165 170 175

Lys Ala Thr Thr Glu Glu Ile Leu Lys Glu Leu Thr Met Tyr Pro Phe  
180 185 190

Val Arg Leu Asn Thr Glu Phe Ser Glu Gln Asn Lys Leu Thr Asn Trp  
195 200 205

Leu Asp Thr Thr Phe Ser Asn Phe Ser Pro Glu Lys Val Ile Gln Val  
210 215 220

Asp Thr Leu Ser Leu Ile Thr His Leu Val Ser His Ser Asp Phe Ala  
225 230 235 240

Ile Val Pro Glu Tyr Thr Asn Ile Gln Leu Leu Asp Asn Ser Ile His  
245 250 255

Thr Leu Thr Tyr Gln Glu Leu Pro Lys Arg Asn Met Ala Val Tyr Tyr  
260 265 270

Leu Lys Glu Arg Tyr Met Ser Arg Gln Leu Gln Gln Leu Leu Ala Glu

275

280

285

Cys Gln Lys Gln Phe Gln  
290

<210> 22  
<211> 2340  
<212> DNA  
<213> *Enterococcus faecalis*

<400> 22  
acaaaaatta ccttcagaat atgatttagc taaagaatat aactgcagtc gcttgaccat 60  
ccgtaaagcg attgatgatt tgatccgcaa aaatattttg gtaaaacgac atggtaaagg 120  
tagttatgtg atgtcgcaag cgaaaattca aagtggctgc gctggcttac aagggttttac 180  
tgaggcagcc aaagcttacg ggaaaaaaag ccagacagaa gtcatttcct ttgaagaagt 240  
agtacatccc gctgagaaaa ttccggaggc gctccaagta ggcaaaaatg aggcaattta 300  
tgaactgatt cgccgccgaa tgttagacgg cgaaccaatg acagttgaaa aaatttattt 360  
gccacaggca tacgtacaag gccatacgaa gcaagacttc gagggctctc ttttctgctt 420  
aatcgagaag aacgtcgaga ttgcttattc gcatcaagaa attgaagcaa tcttagttga 480  
agcggaaatt tcagaattat tgaatgttcc tgtgggccaa ccacttttac aagtccactc 540  
tatcacctat gcgcttgatg caactcctat tttatatgat gtctctttat atcgagcaga 600  
tcggtacacg tttaaaaaca cactgacccg ctatagcccg tctgaaaaca accaagtgga 660  
gctaggaggt tcttggaacg aatgaagatc aaagaagaaa tagccgctca aaaagattta 720  
ttttatgaag acttaaaca aattatcgcg attcgaagtg tgaaagggtc gcctaaaaaa 780  
gaggcacctt ttggcgaagg accgaaaaga gccttggaag aaacgctgaa acttgcagag 840  
cgttatgggt ttcaaactgg gattgtcaat gacgcagttg gctatgcgca atggggaaca 900  
gcggaagaat atctgggaat tattggatcat ttagatgtag taccagaagg ttctggttgg 960  
tcagtgcgc cctttcaatt aacgaaaaaa aatcaacgtt tgtatggtag aggaattcta 1020  
gataataaag gtcctatctt ggcttgcttg tatggaatga aattactgaa agaacttggt 1080  
taccaacca agaaaaccat tcgcttaatg tttggcacgg atgaagaaag tgggagtgga 1140  
gatatccct tatatttaga gaaggaaaac gcacccgttt ttggatttac tccagattgt 1200  
aaatatccag tagtttatgg ggagcgaggg attgttaatt atgagatcac aacgaccatc 1260  
ccagatgatt caagtgaaca aattgggtcag attataggtg atcaagcaaa agaccacgta 1320

cctgatcaat taagtgtggt gattgcggga aaaacaacag caatcacggg aaaacgtgct	1380
ccttccaatg cgccagaact aggcaagaac gcgattactt tattggcaca gaaaattagc	1440
gaggaacagt tagtcaaagg aaatttatta cagtatttcg actgggtaac cgctagtttt	1500
cacgaaaagc actatggcga aggagtagct ctggacttta aggatcagga tagtgggcaa	1560
ttgattttta cgccctatgc gttggaaaaa agaggacagc aattggtggt atcattggcc	1620
gtgcgttata ctgtttctat tacagaaaac gaagtaacca cgcagctaac gaaggcacta	1680
tttccagaaa gtgaagtgac cgtcatccgc cgccctcccta gtacgctggt tccaaaagat	1740
gagcgcaatg ttcaaaaatt aaccaagggt tatgaacaaa ttactggctt agatgggacg	1800
ccagtcacaa ctacaggtgc tacgtatgct cgctttatgc cgaatatcgt tgcttttggt	1860
ccatcatttc ctgggtcaaaa aggcattgctg cataaccaag atgaatatat ggatgaaaaa	1920
gatttactgc ttaatctgga aatctatatg caagcgatga ttgcattaac agaagcataa	1980
aaccaataga agatacacgt atgagaagaa gacaatgtgt ttcgtagagg tcgcatacgt	2040
gtatcttcta tttttctgta taaaatttca ttttcagtat atacaaaaca gtatatacta	2100
gtttataatg gtggagaaat gtaagcgta acgaaagggc ggatggaaaa tgacttgggg	2160
tgcaattgctg acatggcgga tggcacatga tgggttacta aaagctacag aagaattaca	2220
acaaggagggt gctgcaggca cggccgtgga acaattaatt aaagaagtag aagactatcc	2280
tttttataag tcagtgggct acggcggttt acctaataag gaagggattt tagaaatgga	2340

<210> 23  
 <211> 1299  
 <212> DNA  
 <213> Enterococcus faecalis

<400> 23	
atgaagatca aagaagaaat agccgctcaa aaagatttat tttatgaaga cttaaacaaa	60
attatcgca ttcgaagtgt gaaagggctg cctaaaaaag aggcaccttt tggcgaagga	120
ccgaaaagag ccttgggaaga aacgctgaaa cttgcagagc gttatggttt tcaaactggg	180
attgtcaatg acgcagttgg ctatgcgcaa tggggaacag cggaagaata tctgggaatt	240
attggtcatt tagatgtagt accagaagggt tctggttggt cagtgccgcc ctttcaatta	300
acgaaaaaaaa atcaacgttt gtatggtaga ggaattctag ataataaagg tcctatcttg	360
gcttgccgtg atggaatgaa attactgaaa gaacttggtt accaaccaaa gaaaaccatt	420
cgcttaatgt ttggcacgga tgaagaaagt gggagtggag atatccccctt atatttagag	480

aaggaaaacg caccogtttt tggatttact ccagattgta aatatccagt agtttatggg 540  
gagcgaggga ttgttaatta tgagatcaca acgaccatcc cagatgattc aagtgaacaa 600  
attggtcaga ttataggtga tcaagcaaaa gaccacgtac ctgatcaatt aagtgtggtg 660  
attgcgggaa aaacaacagc aatcacggga aaacgtgctc cttccaatgc gccagaacta 720  
ggcaagaacg cgattacttt attggcacag aaaattagcg aggaacagtt agtcaaagga 780  
aatttattac agtatttcga ctggttaacc gctagttttc acgaaaagca ctatggcgaa 840  
ggagtagctc tggactttta ggatcaggat agtgggcaat tgattttaac gccctatgcg 900  
ttggaaaaaa gaggacagca attggtgtta tcattggccg tgcgttatcc tgtttctatt 960  
acagaaaacg aagtaaccac gcagctaacg aaggcactat ttccagaaag tgaagtgacc 1020  
gtcatccgcc gcctccctag tacgctgttt ccaaagatg agcgcaatgt tcaaaaatta 1080  
accaaggttt atgaacaaat tactggctta gatgggacgc cagtcacaac tacagggtgct 1140  
acgtatgctc gctttatgcc gaatatcgtt gcttttggtc catcatttcc tggtaaaaaa 1200  
ggcattgcgc ataaccaaga tgaatatatg gatgaaaaag atttactgct taatctggaa 1260  
atctatatgc aagcgatgat tgcattaaca gaagcataa 1299

<210> 24  
<211> 432  
<212> PRT  
<213> *Enterococcus faecalis*

<400> 24

Met Lys Ile Lys Glu Glu Ile Ala Ala Gln Lys Asp Leu Phe Tyr Glu  
1 5 10 15

Asp Leu Asn Lys Ile Ile Ala Ile Arg Ser Val Lys Gly Ser Pro Lys  
20 25 30

Lys Glu Ala Pro Phe Gly Glu Gly Pro Lys Arg Ala Leu Glu Glu Thr  
35 40 45

Leu Lys Leu Ala Glu Arg Tyr Gly Phe Gln Thr Gly Ile Val Asn Asp  
50 55 60

Ala Val Gly Tyr Ala Gln Trp Gly Thr Ala Glu Glu Tyr Leu Gly Ile  
65 70 75 80

Ile Gly His Leu Asp Val Val Pro Glu Gly Ser Gly Trp Ser Val Pro

85					90					95						
Pro	Phe	Gln	Leu	Thr	Lys	Lys	Asn	Gln	Arg	Leu	Tyr	Gly	Arg	Gly	Ile	
100					105					110						
Leu	Asp	Asn	Lys	Gly	Pro	Ile	Leu	Ala	Cys	Leu	Tyr	Gly	Met	Lys	Leu	
115					120					125						
Leu	Lys	Glu	Leu	Gly	Tyr	Gln	Pro	Lys	Lys	Thr	Ile	Arg	Leu	Met	Phe	
130					135					140						
Gly	Thr	Asp	Glu	Glu	Ser	Gly	Ser	Gly	Asp	Ile	Pro	Leu	Tyr	Leu	Glu	
145					150					155					160	
Lys	Glu	Asn	Ala	Pro	Val	Phe	Gly	Phe	Thr	Pro	Asp	Cys	Lys	Tyr	Pro	
165					170					175						
Val	Val	Tyr	Gly	Glu	Arg	Gly	Ile	Val	Asn	Tyr	Glu	Ile	Thr	Thr	Thr	
180					185					190						
Ile	Pro	Asp	Asp	Ser	Ser	Glu	Gln	Ile	Gly	Gln	Ile	Ile	Gly	Asp	Gln	
195					200					205						
Ala	Lys	Asp	His	Val	Pro	Asp	Gln	Leu	Ser	Val	Val	Ile	Ala	Gly	Lys	
210					215					220						
Thr	Thr	Ala	Ile	Thr	Gly	Lys	Arg	Ala	Pro	Ser	Asn	Ala	Pro	Glu	Leu	
225					230					235					240	
Gly	Lys	Asn	Ala	Ile	Thr	Leu	Leu	Ala	Gln	Lys	Ile	Ser	Glu	Glu	Gln	
245					250					255						
Leu	Val	Lys	Gly	Asn	Leu	Leu	Gln	Tyr	Phe	Asp	Trp	Leu	Thr	Ala	Ser	
260					265					270						
Phe	His	Glu	Lys	His	Tyr	Gly	Glu	Gly	Val	Ala	Leu	Asp	Phe	Lys	Asp	
275					280					285						
Gln	Asp	Ser	Gly	Gln	Leu	Ile	Leu	Thr	Pro	Tyr	Ala	Leu	Glu	Lys	Arg	
290					295					300						
Gly	Gln	Gln	Leu	Val	Leu	Ser	Leu	Ala	Val	Arg	Tyr	Pro	Val	Ser	Ile	
305					310					315					320	

Thr Glu Asn Glu Val Thr Thr Gln Leu Thr Lys Ala Leu Phe Pro Glu  
325 330 335

Ser Glu Val Thr Val Ile Arg Arg Leu Pro Ser Thr Leu Phe Pro Lys  
340 345 350

Asp Glu Arg Asn Val Gln Lys Leu Thr Lys Val Tyr Glu Gln Ile Thr  
355 360 365

Gly Leu Asp Gly Thr Pro Val Thr Thr Thr Gly Ala Thr Tyr Ala Arg  
370 375 380

Phe Met Pro Asn Ile Val Ala Phe Gly Pro Ser Phe Pro Gly Gln Lys  
385 390 395 400

Gly Ile Ala His Asn Gln Asp Glu Tyr Met Asp Glu Lys Asp Leu Leu  
405 410 415

Leu Asn Leu Glu Ile Tyr Met Gln Ala Met Ile Ala Leu Thr Glu Ala  
420 425 430

<210> 25  
<211> 2362  
<212> DNA  
<213> Enterococcus faecalis

<400> 25  
cattttttat taaattacat atttgtaata ggaatttcoct gtgaaatgag gtatcctaag 60  
aaaggtgata aaacacagag gtaaaggagt gacacgatga gtcgtgtaga tcgttataaa 120  
catattcatg aaaaatcgag accagcagag cataaaaaga cctttaatcc ccgaaaatca 180  
atgggtgaac atagagaaga agaaccagaa gaactagctg aaagccttca agagccagtt 240  
tacgaagaca gctatactga ggacagtcgc agaagtgaga ggcgacatca aacagattca 300  
gggtggtggca acggttctga ccaaccaccc cgcggaaaaa aagacaagaa accaaaaaag 360  
aaacgtaaaa aatcaaaaac aaaacgcttt ttcaaattggc tagtgatcct attgattctg 420  
ttatttgcct atagtacagt catgttttta aaaggaaaat ctgcagcaga acatgatgac 480  
tcgttgccctc aagaaaaagt agaaacattt aatgggtgtca aaagtagcaa cggggctaag 540  
aatatttttaa ttcttggcag cgatacacgt ggggaagatg ctggacgagc cgacacaata 600  
atggttctcc aactaaatgg accatcaaaa aaaccgaaat taatttcatt tatgcgtgat 660

acattcgtgg acattcctgg tgtcggggccg aataaaatta atgccgcata cgcttatggc	720
gggtgctgaat tgggtcgtga aacgttaaaa caaaacttta atttagatac gaaatattat	780
gctaaggtag atttccaatc atttgaaaaa attgttgact ctatgtttcc aaaaggtgtc	840
aaaatcgatg cagaaaaatc actgaattta gatggtgttg atattgaaaa agggcaacag	900
gtcatggatg gacatgtctt acttcaatac gctcgttta ggatggatga agaaggcgac	960
tttggtcggg ttcgtcgcca acaacaagtt atgtcagctg taatgagcca aatgaaaaac	1020
ccaatgactt tattaagaac ccagaatca cttgggaaat tagtcggcta tatgtcgaca	1080
gatgtgcctg ttagtttcat gttaacgaat ggaccatcat tgttgattaa aggaaaagca	1140
ggggttgagt cattatcggg tccggtacca gattcttgga attttggtga atcctcttat	1200
gcaggcagta ttttagaagt agatgaacaa aaaaatgctg acgccatcga aaaattcctg	1260
aacgaataag gaaagcattt taaaatatcc ttttttatgc tatattagaa acaacgtgga	1320
aaattagtga aacgaggtta caaaatgaaa attgctattg tgacagatag tacagcttat	1380
ttacccgagc gcattaaaga tcatccgaat ctttttgtaa ttcccatccc agtcatttta	1440
gatggaaaaa tatacaacga aggcattgac attgaagcag atgaatatta tgcattgcta	1500
aataatagta aagaatttcc gacgacttca caacctgctt taggagaagt gttagagctt	1560
tacaaatcaa tcgtgaaca agggtaacgac accatcatca gcattcatct ttcttcagga	1620
atctctggtt ttgttcatac attgcacgga cttaccgatg aaatcccagg cgttgctttg	1680
tatccatatg actcaaaaat tacaagtatg ccaatgggac acatggtaga agctgcttta	1740
gatttaacag aagaaaaagc cagcttagaa gaaatttttg ccaaattaga ttttaattcgt	1800
gacaatacgt atgcatatct aattgtagaa gatctgaaca acttagttcg tggcggtcgc	1860
ttaacgaatg ggcagcctt gatcgtgga ctattgaaga ttaaacctat cttgactttt	1920
gaagatggaa agattgtatt atttgaaaaa atcogttcaa caaagaaagc ttttgctcgt	1980
gcagaaaaga ttattggtga acgaaacgca gggattgaag caccagttaa actgtatgtg	2040
attcatgcca ataaccgcat cgttgctgaa aaagaacaag caaaattaca aaagctatac	2100
ccaaatgcag aaattgaaat tggtcatttt ggtccagtta tcgggaccca cctaggggaa	2160
aaagcaattg gtttagcgat ttcagctcaa taataaaaga tgagacaaaa gttaaactact	2220
tctgtctcat cttttattct attattttat cgttcgctgg tgttactcag ccgaacactt	2280
tttgtttata agaaaatgta aaattactcc tttttattag aaaatatctt gcaaattaag	2340

caattcctta caaagtaatg ta

2362

<210> 26  
<211> 849  
<212> DNA  
<213> Enterococcus faecalis

<400> 26  
atgaaaattg ctattgtgac agatagtaca gcttatttac ccgagcgcac taaagatcat 60  
ccgaatcttt ttgtaattcc catcccagtc atttttagatg gaaaaatata caacgaaggc 120  
attgacattg aagcagatga atattatgca ttgctaaata atagtaaaga atttccgacg 180  
acttcacaac ctgcttttagg agaagtgtta gagctttaca aatcaatcgc tgaacaaggg 240  
tacgacacca tcatcagcat tcattcttct tcaggaatct ctggttttgt tcatacattg 300  
cacggactta ccgatgaaat ccagggcgtt gctttgtatc catatgactc aaaaattaca 360  
agtatgccaa tgggacacat ggtagaagct gcttttagatt taacagaaga aaaagccagc 420  
ttagaagaaa tttttgccaa attagattta attcgtgaca atacgtatgc atatctaatt 480  
gtagaagatc tgaacaactt agttcgtggc ggtcgcttaa cgaatggcgc agccttgatc 540  
gctggactat tgaagattaa acctatcttg acttttgaag atggaaagat tgtattattt 600  
gaaaaaatcc gttcaacaaa gaaagctttt gctcgtgcag aaaagattat tgggtgaacga 660  
aacgcaggga ttgaagcacc agttaaactg tatgtgattc atgccaataa ccgcatcggt 720  
gctgaaaaag aacaagcaaa attacaaaag ctatacccaa atgcagaaat tgaaattggg 780  
cattttgggc cagttatcgg gaccaccta ggggaaaaag caattgggtt agcgatttca 840  
gctcaataa 849

<210> 27  
<211> 282  
<212> PRT  
<213> Enterococcus faecalis

<400> 27  
Met Lys Ile Ala Ile Val Thr Asp Ser Thr Ala Tyr Leu Pro Glu Arg  
1 5 10 15  
Ile Lys Asp His Pro Asn Leu Phe Val Ile Pro Ile Pro Val Ile Leu  
20 25 30  
Asp Gly Lys Ile Tyr Asn Glu Gly Ile Asp Ile Glu Ala Asp Glu Tyr  
35 40 45



Tyr Ala Leu Leu Asn Asn Ser Lys Glu Phe Pro Thr Thr Ser Gln Pro  
50 55 60

Ala Leu Gly Glu Val Leu Glu Leu Tyr Lys Ser Ile Ala Glu Gln Gly  
65 70 75 80

Tyr Asp Thr Ile Ile Ser Ile His Leu Ser Ser Gly Ile Ser Gly Phe  
85 90 95

Val His Thr Leu His Gly Leu Thr Asp Glu Ile Pro Gly Val Ala Leu  
100 105 110

Tyr Pro Tyr Asp Ser Lys Ile Thr Ser Met Pro Met Gly His Met Val  
115 120 125

Glu Ala Ala Leu Asp Leu Thr Glu Glu Lys Ala Ser Leu Glu Glu Ile  
130 135 140

Phe Ala Lys Leu Asp Leu Ile Arg Asp Asn Thr Tyr Ala Tyr Leu Ile  
145 150 155 160

Val Glu Asp Leu Asn Asn Leu Val Arg Gly Gly Arg Leu Thr Asn Gly  
165 170 175

Ala Ala Leu Ile Ala Gly Leu Leu Lys Ile Lys Pro Ile Leu Thr Phe  
180 185 190

Glu Asp Gly Lys Ile Val Leu Phe Glu Lys Ile Arg Ser Thr Lys Lys  
195 200 205

Ala Phe Ala Arg Ala Glu Lys Ile Ile Gly Glu Arg Asn Ala Gly Ile  
210 215 220

Glu Ala Pro Val Lys Leu Tyr Val Ile His Ala Asn Asn Arg Ile Val  
225 230 235 240

Ala Glu Lys Glu Gln Ala Lys Leu Gln Lys Leu Tyr Pro Asn Ala Glu  
245 250 255

Ile Glu Ile Gly His Phe Gly Pro Val Ile Gly Thr His Leu Gly Glu  
260 265 270

Lys Ala Ile Gly Leu Ala Ile Ser Ala Gln  
 275 280

<210> 28  
 <211> 2203  
 <212> DNA  
 <213> Enterococcus faecalis

<400> 28  
 gagattatct aaagaaaagt aagcacaatt cgagggttca atgttttttt caaagggatg 60  
 attttctaga atgtcacaag aaaagatcat tttatagtac tgaaatagtt gaggaatgtc 120  
 ttttcgttta tctgtatcat aaacagcaag caattctttt gctgtaacaa ctaagccagt 180  
 ttctttccaat acttcttttt caatattttt tttaggagag cagccaattt cggcatagcc 240  
 accaggtaat gaccattctt tgggtccgtaa atcttcaact aataaaaaac gattctcttt 300  
 ttttatcaaa ccgcgaacat ctactttcgg tgttggataa ccttcttctt tagttaagat 360  
 tttttctaag tcgggcaaga cagtcgcttc gtgtccggtt gcgctaataa gttgtaacgt 420  
 aagttctcgt agttcttggt aacgttcttg atcaaaagca tctttcccggt aaaaagacc 480  
 agcatctgcc aatgctagca accgcttata agtgttcaga taatccatat acgcacgctc 540  
 ctcatagact taatacgttt agtttaacag aaaaaaataa agaaagggca gatttagcga 600  
 gaaaaggcgt cgttttaagg aaataataaa gaataaatga ctaacttaca tttttaaact 660  
 acctatgcta ttatttaata aaaaagattg ggtatacaat aattttgtta tgtaaacaaa 720  
 aaggagggtt taaattgaaa gaatttaca ttataaggga aaaaaatgca gataaaaaga 780  
 ctcaggcagc acaagaagta ttgtttaatc ttccagaatg gtttggcctt gaaaaagaga 840  
 cccgcaagta tatcgatata gctagcactt tacctatgtg ggtggcaaag gatgtagaga 900  
 ataaaatact cggttttata acactttcag aaacaagtaa agatacagta gaaatccatt 960  
 gtatggcagt taaaaagcgg tatcatcgca aaggtatcgg caagttattg atagaaagcg 1020  
 tggaaacgta ttctaaaaat aactattttt ttattcaagt caaacagtt gacgaaggaa 1080  
 attattccgt gtacgatcat actattcgtt ttacgaatc attgggtttt aagcgccttg 1140  
 aggtttttcc gacattatgg gacgcttgga atccttgttt aattttaatt aaacagttga 1200  
 tttaatctac aaaggagttt tagtatgtca gtatttatta gagagtgtac cgtcgcagac 1260  
 gtaccagaat tagaggccat ttgccaaag acttttgag atacttatgg agatggcgaa 1320  
 aacgaaaagg atttacaggc acattatgag aggaaattta gtccagcagt tttagaaagc 1380

gaaatcttac ataaagattc gcaatatttc tttgcttttt ataataatga acttgcaggt 1440  
 tatgtgaaat taaatcacgg tgatgctcag attacctatc aacatccaca agcggttaciaa 1500  
 gttgagcgca tttatattcg taaatctttt aagcgtttag gcttaggcaa acatttgatt 1560  
 acgaaagcaa ttgaattagc ggaagaagca gaaaaagaga cggtttggtt aggtggttg 1620  
 gaacataatc atccagcgca aaaattttat caatcattgg gcttcgtcaa aacagatgaa 1680  
 catgattttt atatgggaaa tgaacgccat accgattata caatgacgaa acagttaaaa 1740  
 gagtcaacgt aaagcaaaaa caaggaaacg gacgcaatga agccgacgat tccttggttt 1800  
 tttatcttaa aattgtgaag gagattttcc ataatatattt ttgaataatt tactgaaatg 1860  
 ataggcatct tcgtaaccaa ccgtttttgc cacttctttg acacttaggg aatcattttt 1920  
 cagcaattct ttcgcatggg ttaagcggat ttgaattaaa taattgattg gccaacgcc 1980  
 tgtggccgct ttaaagggtt tcgacaaata agtcgggggc acatatagca tttcagctaa 2040  
 ctgttccaaa gtaatttctt cgtcatgggtg cgtttccaga taataaatcg tatgattgac 2100  
 taaatttcgt tttctttttt ccgttttcga tagccgagtt tcaattttat tttcttgatc 2160  
 aactgctaag cttcttaaaa tatagaccaa tagttcaata act 2203

<210> 29  
 <211> 528  
 <212> DNA  
 <213> Enterococcus faecalis

<400> 29  
 atgtcagtat ttattagaga gtgtaccgtc gcagacgtac cagaattaga ggccatttgc 60  
 caagagactt ttgcagatac ttatggagat ggcgaaaacg aaaaggattt acaggcacat 120  
 tatgagagga aatttagtcc agcagtttta gaaagcgaaa tcttacataa agattcgcaa 180  
 tatttctttg ctttttataa taatgaactt gcaggttatg tgaaattaaa tcacggtgat 240  
 gctcagatta cctatcaaca tccacaagcg ttacaagttg agcgcattha tattcgtaaa 300  
 tcttttaagc gtttaggctt aggcaaacat ttgattacga aagcaattga attagcggaa 360  
 gaagcagaaa aagagacggg ttggttagggt gtttggaac ataatcatcc agcgcaaaaa 420  
 ttttatcaat cattgggctt cgtcaaaaca gatgaacatg atttttatat gggaaatgaa 480  
 cgccataccg attatacaat gacgaaacag ttaaaagagt caacgtaa 528

<210> 30  
 <211> 175  
 <212> PRT

<213> Enterococcus faecalis

<400> 30

Met Ser Val Phe Ile Arg Glu Cys Thr Val Ala Asp Val Pro Glu Leu  
1 5 10 15

Glu Ala Ile Cys Gln Glu Thr Phe Ala Asp Thr Tyr Gly Asp Gly Glu  
20 25 30

Asn Glu Lys Asp Leu Gln Ala His Tyr Glu Arg Lys Phe Ser Pro Ala  
35 40 45

Val Leu Glu Ser Glu Ile Leu His Lys Asp Ser Gln Tyr Phe Phe Ala  
50 55 60

Phe Tyr Asn Asn Glu Leu Ala Gly Tyr Val Lys Leu Asn His Gly Asp  
65 70 75 80

Ala Gln Ile Thr Tyr Gln His Pro Gln Ala Leu Gln Val Glu Arg Ile  
85 90 95

Tyr Ile Arg Lys Ser Phe Lys Arg Leu Gly Leu Gly Lys His Leu Ile  
100 105 110

Thr Lys Ala Ile Glu Leu Ala Glu Glu Ala Glu Lys Glu Thr Val Trp  
115 120 125

Leu Gly Val Trp Glu His Asn His Pro Ala Gln Lys Phe Tyr Gln Ser  
130 135 140

Leu Gly Phe Val Lys Thr Asp Glu His Asp Phe Tyr Met Gly Asn Glu  
145 150 155 160

Arg His Thr Asp Tyr Thr Met Thr Lys Gln Leu Lys Glu Ser Thr  
165 170 175

<210> 31

<211> 8347

<212> DNA

<213> Enterococcus faecalis

<220>

<221> exon

<222> (162)..(1028)

<220>  
 <221> exon  
 <222> (1065)..(2090)

<220>  
 <221> exon  
 <222> (2113)..(3189)

<220>  
 <221> exon  
 <222> (3191)..(4357)

<220>  
 <221> exon  
 <222> (4391)..(5485)

<220>  
 <221> exon  
 <222> (5492)..(6778)

<220>  
 <221> exon  
 <222> (6795)..(7304)

<220>  
 <221> exon  
 <222> (7312)..(8160)

<400> 31  
 ccatgtagat ttaagaaaat ctatagtggc ttttatattg cttttttgta gggatttcac 60  
 tgtagatttt tcttaaaatt tactgtgaat atcctttttg tttggccaaa aattaggatt 120  
 tcagaaactt actaaaaaaaa tttcgtaaag gagcacacag g atg aaa gaa ata act 176  
 Met Lys Glu Ile Thr  
 1 5  
 gga gcc act cgt tta gct ggg cta ttc gcg aaa ccc agc caa cac agt 224  
 Gly Ala Thr Arg Leu Ala Gly Leu Phe Ala Lys Pro Ser Gln His Ser  
 10 15 20  
 att tca ccg ttg att cat aat aca gca ttt caa aat tta gga gtt gat 272  
 Ile Ser Pro Leu Ile His Asn Thr Ala Phe Gln Asn Leu Gly Val Asp  
 25 30 35  
 gct cgg tat ctg gcg ttt gac gtt gga caa gag aca ttg cca caa gca 320  
 Ala Arg Tyr Leu Ala Phe Asp Val Gly Gln Glu Thr Leu Pro Gln Ala  
 40 45 50  
 att gaa gcg att cga acg ttt cac atg tta ggg gcc aac tta tca atg 368  
 Ile Glu Ala Ile Arg Thr Phe His Met Leu Gly Ala Asn Leu Ser Met  
 55 60 65  
 ccc aat aaa gtg gcg gct gta agt tat atg gat gaa cta agt cct acc 416  
 Pro Asn Lys Val Ala Ala Val Ser Tyr Met Asp Glu Leu Ser Pro Thr  
 70 75 80 85

gct caa ctg gtt ggc gca att aat acg att gtc aac aaa gat gga aaa	464
Ala Gln Leu Val Gly Ala Ile Asn Thr Ile Val Asn Lys Asp Gly Lys	
90 95 100	
ctt tac gga gac agc acg gat ggt act ggt ttt atg tgg agt ttg aaa	512
Leu Tyr Gly Asp Ser Thr Asp Gly Thr Gly Phe Met Trp Ser Leu Lys	
105 110 115	
gag aaa aag gtt gac gtt ttt cag aat aaa atg acc atc tta gga aca	560
Glu Lys Lys Val Asp Val Phe Gln Asn Lys Met Thr Ile Leu Gly Thr	
120 125 130	
ggt ggt gca gcc tta tca atc att gcc caa gct gct tta gat ggc gtg	608
Gly Gly Ala Ala Leu Ser Ile Ile Ala Gln Ala Ala Leu Asp Gly Val	
135 140 145	
aaa gaa atc gcc gtt tac aac agg aaa agc gcg ggc ttt aac gac agt	656
Lys Glu Ile Ala Val Tyr Asn Arg Lys Ser Ala Gly Phe Asn Asp Ser	
150 155 160 165	
caa aaa aaa ctg gca aat ttc act gaa cga acc aac tgt gta att cat	704
Gln Lys Lys Leu Ala Asn Phe Thr Glu Arg Thr Asn Cys Val Ile His	
170 175 180	
tta aac gat tta gcg gat act gaa aaa cta gca aaa gat gtt gct gaa	752
Leu Asn Asp Leu Ala Asp Thr Glu Lys Leu Ala Lys Asp Val Ala Glu	
185 190 195	
agc gtc ttg tta gtt aat gca acg agt gtg ggt atg cat cca cat gcg	800
Ser Val Leu Leu Val Asn Ala Thr Ser Val Gly Met His Pro His Ala	
200 205 210	
cat agt agt cct ata gaa aat tat gca atg att caa ccg aag tta ttt	848
His Ser Ser Pro Ile Glu Asn Tyr Ala Met Ile Gln Pro Lys Leu Phe	
215 220 225	
gtg tat gat gct att tat aat ccc aga gaa aca cag tta tta aaa gaa	896
Val Tyr Asp Ala Ile Tyr Asn Pro Arg Glu Thr Gln Leu Leu Lys Glu	
230 235 240 245	
gcc cgt tta cgt ggt gca gaa aca agc aac ggc ttg gac atg cta ctt	944
Ala Arg Leu Arg Gly Ala Glu Thr Ser Asn Gly Leu Asp Met Leu Leu	
250 255 260	
tat caa ggc gct gct gct ttt gaa caa tgg aca gga caa aaa atg cct	992
Tyr Gln Gly Ala Ala Ala Phe Glu Gln Trp Thr Gly Gln Lys Met Pro	
265 270 275	
gta tca gtc gta aaa cgt aaa att gaa aat aga taa aaagagcgcc	1038
Val Ser Val Val Lys Arg Lys Ile Glu Asn Arg	
280 285	
gttttaaaggc atgaggagag aatata atg atc gta att atg aaa gaa aat gca	1091
Met Ile Val Ile Met Lys Glu Asn Ala	
290 295	

acc gaa aag caa atg aaa caa gtc att gat tta gta aca ggt gca ggc	1139
Thr Glu Lys Gln Met Lys Gln Val Ile Asp Leu Val Thr Gly Ala Gly	
300 305 310	
tta act act caa aca agt caa gat aat gga aaa aca gtg ata ggc ttg	1187
Leu Thr Thr Gln Thr Ser Gln Asp Asn Gly Lys Thr Val Ile Gly Leu	
315 320 325	
att ggt gat aca gaa aaa tta gtt gaa gca gag tta aca gca tta gaa	1235
Ile Gly Asp Thr Glu Lys Leu Val Glu Ala Glu Leu Thr Ala Leu Glu	
330 335 340 345	
ggc gtg gag aaa agt gtc cgc att tcg ttg tct tac aaa cta acg agt	1283
Gly Val Glu Lys Ser Val Arg Ile Ser Leu Ser Tyr Lys Leu Thr Ser	
350 355 360	
cgt tta ttt cat cca gag aat aca gtg gtt gat gtg aac ggt gtt aaa	1331
Arg Leu Phe His Pro Glu Asn Thr Val Val Asp Val Asn Gly Val Lys	
365 370 375	
atc ggt gac ggc agt atg acc atg atg gcg ggc cct tgt tca atc gaa	1379
Ile Gly Asp Gly Ser Met Thr Met Met Ala Gly Pro Cys Ser Ile Glu	
380 385 390	
agc tta gat cag att cgc gaa tgt gcg cga att gct aaa gct gga ggt	1427
Ser Leu Asp Gln Ile Arg Glu Cys Ala Arg Ile Ala Lys Ala Gly Gly	
395 400 405	
gca aca att tta cga ggt ggt gca ttc aaa cct aga acg tcg cca tac	1475
Ala Thr Ile Leu Arg Gly Gly Ala Phe Lys Pro Arg Thr Ser Pro Tyr	
410 415 420 425	
gct ttc caa gga cta gaa gaa gaa gga cta aaa tac att cgc caa gcg	1523
Ala Phe Gln Gly Leu Glu Glu Glu Gly Leu Lys Tyr Ile Arg Gln Ala	
430 435 440	
gct gat gaa tta gat atg caa gtc att aca gaa gtg atg gat gaa gcg	1571
Ala Asp Glu Leu Asp Met Gln Val Ile Thr Glu Val Met Asp Glu Ala	
445 450 455	
aat tta gaa ctt gtc gca aaa tac agt gac att tta caa atc ggt gcg	1619
Asn Leu Glu Leu Val Ala Lys Tyr Ser Asp Ile Leu Gln Ile Gly Ala	
460 465 470	
cgc aac atg caa aat ttc aag tta tta caa gcg gtt ggt aaa act gga	1667
Arg Asn Met Gln Asn Phe Lys Leu Leu Gln Ala Val Gly Lys Thr Gly	
475 480 485	
aaa cct att ggc tta aaa cgc ggg att gct ggt acg att gat gaa tgg	1715
Lys Pro Ile Gly Leu Lys Arg Gly Ile Ala Gly Thr Ile Asp Glu Trp	
490 495 500 505	
cta aac gca gct gaa tac att gct gcg caa gga aat ttc aat gtg atc	1763
Leu Asn Ala Ala Glu Tyr Ile Ala Ala Gln Gly Asn Phe Asn Val Ile	
510 515 520	
ttc att gaa cgt ggg att cgt acg tac gaa acc gct acg cgc aat aca	1811

Phe Ile Glu Arg Gly Ile Arg Thr Tyr Glu Thr Ala Thr Arg Asn Thr	
525 530 535	
ctt gat tta agt gcg gtg cct tta att aaa aaa tta agt cat ttt cca	1859
Leu Asp Leu Ser Ala Val Pro Leu Ile Lys Lys Leu Ser His Phe Pro	
540 545 550	
att att gtt gat ccg agt cat ggt gtt ggt atc tgg gat tta gta ccg	1907
Ile Ile Val Asp Pro Ser His Gly Val Gly Ile Trp Asp Leu Val Pro	
555 560 565	
cca atg gcc cga gca ggt gtt gct tca ggt gcg gac ggc ttg att gta	1955
Pro Met Ala Arg Ala Gly Val Ala Ser Gly Ala Asp Gly Leu Ile Val	
570 575 580 585	
gaa att cat cca gat cca gcg aat gcg tgg tca gat ggg cca caa tcc	2003
Glu Ile His Pro Asp Pro Ala Asn Ala Trp Ser Asp Gly Pro Gln Ser	
590 595 600	
ttg aat gaa aaa act tac cta cgt atg atg aaa gaa gtt cat atc atc	2051
Leu Asn Glu Lys Thr Tyr Leu Arg Met Met Lys Glu Val His Ile Ile	
605 610 615	
gaa aaa gca atg aaa gaa att aat gct tta gaa gat tag taaagacaga	2100
Glu Lys Ala Met Lys Glu Ile Asn Ala Leu Glu Asp	
620 625	
ggagtagagg ac atg aaa tta acc gta acg tta cct aca cat tca tat gat	2151
Met Lys Leu Thr Val Thr Leu Pro Thr His Ser Tyr Asp	
630 635 640	
tta acc atc gaa aca ggt gcc tta gat aaa att ggc acc tgg gta cgt	2199
Leu Thr Ile Glu Thr Gly Ala Leu Asp Lys Ile Gly Thr Trp Val Arg	
645 650 655	
agc ctg tgg cag cca caa cgg gta gcg att att acc gat gaa acg gtg	2247
Ser Leu Trp Gln Pro Gln Arg Val Ala Ile Ile Thr Asp Glu Thr Val	
660 665 670	
aat aaa tta tat ggc gca gct gtt gag aaa gaa ttg caa gct gct ggt	2295
Asn Lys Leu Tyr Gly Ala Ala Val Glu Lys Glu Leu Gln Ala Ala Gly	
675 680 685 690	
ttt gaa aca tca ttg att gct gta gcg gca ggt gaa caa agt aag agc	2343
Phe Glu Thr Ser Leu Ile Ala Val Ala Ala Gly Glu Gln Ser Lys Ser	
695 700 705	
ctc gaa ata gct caa ctg ctt tat gat ttt tta gcg gaa cag caa ttg	2391
Leu Glu Ile Ala Gln Leu Leu Tyr Asp Phe Leu Ala Glu Gln Gln Leu	
710 715 720	
act cga agt gat ggt cta att gct tta ggt gga ggc gtt gtg gga gat	2439
Thr Arg Ser Asp Gly Leu Ile Ala Leu Gly Gly Gly Val Val Gly Asp	
725 730 735	
cta gct gga ttt gtc gct tca acc tat atg cgc ggt att cac ttt ttg	2487
Leu Ala Gly Phe Val Ala Ser Thr Tyr Met Arg Gly Ile His Phe Leu	



740	745	750	
caa gta cca aca acc tta ctg gca caa gta gat agt agc att gga ggt			2535
Gln Val Pro Thr Thr Leu Leu Ala Gln Val Asp Ser Ser Ile Gly Gly			
755	760	765	770
aaa aca gcg gtt aat act aaa aaa gcc aaa aat ctt gtc ggt act ttt			2583
Lys Thr Ala Val Asn Thr Lys Lys Ala Lys Asn Leu Val Gly Thr Phe			
	775	780	785
gcc caa cca gat ggg gtt tta att gat cct aat aca ctt aaa aca tta			2631
Ala Gln Pro Asp Gly Val Leu Ile Asp Pro Asn Thr Leu Lys Thr Leu			
	790	795	800
gaa cct aga cgt gtg cgt gaa gga att gca gaa att gta aaa tca gca			2679
Glu Pro Arg Arg Val Arg Glu Gly Ile Ala Glu Ile Val Lys Ser Ala			
	805	810	815
gct atc gct gat gtt gaa ttg tgg cac cgt tta tcc tct ttg gaa aat			2727
Ala Ile Ala Asp Val Glu Leu Trp His Arg Leu Ser Ser Leu Glu Asn			
	820	825	830
gaa caa gat tta gtg gca cat gca gaa gaa att atc acg gcc tgt tgc			2775
Glu Gln Asp Leu Val Ala His Ala Glu Glu Ile Ile Thr Ala Cys Cys			
	835	840	845
aag att aaa cgt gat gtc gtc gaa gaa gat gaa tta gat ttg ggc tta			2823
Lys Ile Lys Arg Asp Val Val Glu Glu Asp Glu Leu Asp Leu Gly Leu			
	855	860	865
cgt ttg att ctg aat ttt ggg cat acg atc ggc cac gca tta gaa aat			2871
Arg Leu Ile Leu Asn Phe Gly His Thr Ile Gly His Ala Leu Glu Asn			
	870	875	880
aca gct ggt tac ggg gtg att gct cac ggt gaa ggc gtt tct tta gga			2919
Thr Ala Gly Tyr Gly Val Ile Ala His Gly Glu Gly Val Ser Leu Gly			
	885	890	895
atg att caa ata act caa gtc gca gaa caa caa ggg ctt tcc cca ctt			2967
Met Ile Gln Ile Thr Gln Val Ala Glu Gln Gln Gly Leu Ser Pro Leu			
	900	905	910
ggg act acc caa gag ttg gtc acc atg cta gaa aag ttc cat tta cca			3015
Gly Thr Thr Gln Glu Val Thr Met Leu Glu Lys Phe His Leu Pro			
	915	920	925
gta acc aca gat cgt tgg tca gaa gaa cgt ctc tat caa gca att aca			3063
Val Thr Thr Asp Arg Trp Ser Glu Glu Arg Leu Tyr Gln Ala Ile Thr			
	935	940	945
cat gat aaa aaa aca cgt ggg gga cag att aaa atc att gtc tta gaa			3111
His Asp Lys Lys Thr Arg Gly Gly Gln Ile Lys Ile Ile Val Leu Glu			
	950	955	960
aaa att ggt caa gcg aaa att gtc tct tta cca acg gaa gaa att cga			3159
Lys Ile Gly Gln Ala Lys Ile Val Ser Leu Pro Thr Glu Glu Ile Arg			
	965	970	975

gca ttt tta aac aga gaa gga gga att taa g atg cgc ttt att aca gca	3208
Ala Phe Leu Asn Arg Glu Gly Gly Ile Met Arg Phe Ile Thr Ala	
980 985 990	
ggc gaa tca cat gga cct gaa tta act gct att att gaa ggc tta cca	3256
Gly Glu Ser His Gly Pro Glu Leu Thr Ala Ile Ile Glu Gly Leu Pro	
995 1000 1005	
gcc ggc ttg cct tta agt agc gaa gag att aac cga gaa tta gca	3301
Ala Gly Leu Pro Leu Ser Ser Glu Glu Ile Asn Arg Glu Leu Ala	
1010 1015 1020	
aga cgt caa ggc ggt tac ggt cgt ggg gga cgg atg aaa att gaa	3346
Arg Arg Gln Gly Gly Tyr Gly Arg Gly Gly Arg Met Lys Ile Glu	
1025 1030 1035	
aaa gac caa gta cgt att act tcg ggt att cgg cat ggt aaa aca	3391
Lys Asp Gln Val Arg Ile Thr Ser Gly Ile Arg His Gly Lys Thr	
1040 1045 1050	
ctt ggc tca cca gta acg ttg att gtc gaa aac aaa gac tgg aaa	3436
Leu Gly Ser Pro Val Thr Leu Ile Val Glu Asn Lys Asp Trp Lys	
1055 1060 1065	
aat tgg acc tcc gtg atg tca gta gag cca gtt cct gaa aaa caa	3481
Asn Trp Thr Ser Val Met Ser Val Glu Pro Val Pro Glu Lys Gln	
1070 1075 1080	
aag aaa atc cgc cgc gtc agc aaa cca cgt cca gga cat gct gat	3526
Lys Lys Ile Arg Arg Val Ser Lys Pro Arg Pro Gly His Ala Asp	
1085 1090 1095	
tta gtc ggt ggc atg aaa tat caa cat gat gat tta cgg aat gtt	3571
Leu Val Gly Gly Met Lys Tyr Gln His Asp Asp Leu Arg Asn Val	
1100 1105 1110	
tta gaa cgg tct tcg gca cga gaa aca acg atg cgt gtg gcg att	3616
Leu Glu Arg Ser Ser Ala Arg Glu Thr Thr Met Arg Val Ala Ile	
1115 1120 1125	
ggt gcg gtt gct aaa aaa ctc tta gct gaa ctg gat atc caa gtc	3661
Gly Ala Val Ala Lys Lys Leu Leu Ala Glu Leu Asp Ile Gln Val	
1130 1135 1140	
gct ggg cat gtc gcg gta tta ggt ggg att gaa gct acg atc cct	3706
Ala Gly His Val Ala Val Leu Gly Gly Ile Glu Ala Thr Ile Pro	
1145 1150 1155	
gaa aat tta acg att cgt gaa att caa gaa cga tct gaa caa tct	3751
Glu Asn Leu Thr Ile Arg Glu Ile Gln Glu Arg Ser Glu Gln Ser	
1160 1165 1170	
gcc gtt cgc gta tta gat cct tcc gta gaa gaa aaa atg aaa gaa	3796
Ala Val Arg Val Leu Asp Pro Ser Val Glu Glu Lys Met Lys Glu	
1175 1180 1185	

cta	att	gac	caa	acc	aag	aaa	aat	ggc	gat	aca	att	ggt	ggg	gta	3841
Leu	Ile	Asp	Gln	Thr	Lys	Lys	Asn	Gly	Asp	Thr	Ile	Gly	Gly	Val	
1190					1195					1200					
gta	gaa	gta	ctt	gtg	ggt	ggc	gtt	cca	gct	ggc	tta	ggt	agc	tat	3886
Val	Glu	Val	Leu	Val	Gly	Gly	Val	Pro	Ala	Gly	Leu	Gly	Ser	Tyr	
1205					1210					1215					
gtc	caa	tgg	gat	cgt	aaa	cta	gat	gcc	aaa	att	gcg	caa	gca	gtt	3931
Val	Gln	Trp	Asp	Arg	Lys	Leu	Asp	Ala	Lys	Ile	Ala	Gln	Ala	Val	
1220					1225					1230					
gta	agc	atc	aac	gct	ttt	aca	ggt	gct	gag	ttt	ggc	att	gga	ttt	3976
Val	Ser	Ile	Asn	Ala	Phe	Thr	Gly	Ala	Glu	Phe	Gly	Ile	Gly	Phe	
1235					1240					1245					
gaa	atg	gca	caa	cgc	cct	ggt	agt	caa	ctg	atg	gac	gag	att	gtt	4021
Glu	Met	Ala	Gln	Arg	Pro	Gly	Ser	Gln	Leu	Met	Asp	Glu	Ile	Val	
1250					1255					1260					
tgg	gac	gaa	agt	act	ggt	tat	acc	aga	act	tcc	aac	aat	tta	ggc	4066
Trp	Asp	Glu	Ser	Thr	Gly	Tyr	Thr	Arg	Thr	Ser	Asn	Asn	Leu	Gly	
1265					1270					1275					
ggt	ttt	gaa	gga	gga	atg	acc	aac	gga	atg	cca	atc	atc	gtt	cgt	4111
Gly	Phe	Glu	Gly	Gly	Met	Thr	Asn	Gly	Met	Pro	Ile	Ile	Val	Arg	
1280					1285					1290					
ggt	gtc	atg	aaa	cct	att	cca	acc	ctt	tat	aaa	cca	tta	caa	agc	4156
Gly	Val	Met	Lys	Pro	Ile	Pro	Thr	Leu	Tyr	Lys	Pro	Leu	Gln	Ser	
1295					1300					1305					
gtg	aat	att	gat	aca	aaa	gag	cct	tat	aag	gcc	agt	gtt	gag	cgc	4201
Val	Asn	Ile	Asp	Thr	Lys	Glu	Pro	Tyr	Lys	Ala	Ser	Val	Glu	Arg	
1310					1315					1320					
tct	gat	agc	acg	gcg	gta	ccg	gcc	gct	agc	gtt	gtt	tgt	gaa	gcc	4246
Ser	Asp	Ser	Thr	Ala	Val	Pro	Ala	Ala	Ser	Val	Val	Cys	Glu	Ala	
1325					1330					1335					
gtt	gtt	gca	acg	gaa	gta	gca	aag	gct	atg	ctc	gaa	aaa	ttt	gat	4291
Val	Val	Ala	Thr	Glu	Val	Ala	Lys	Ala	Met	Leu	Glu	Lys	Phe	Asp	
1340					1345					1350					
agt	gac	tca	ttt	gaa	caa	atg	aaa	gaa	gca	gtg	aaa	cgt	tat	cgt	4336
Ser	Asp	Ser	Phe	Glu	Gln	Met	Lys	Glu	Ala	Val	Lys	Arg	Tyr	Arg	
1355					1360					1365					
cta	tat	act	caa	aac	ttt	tta	tggaagaaag	tcgcaagtat	atggagggaa						4387
Leu	Tyr	Thr	Gln	Asn	Phe										
1370					1375										
aaa	atg	aag	aaa	cgt	att	tta	atc	gta	gga	tta	ggg	cta	atc	ggg	4432
	Met	Lys	Lys	Arg	Ile	Leu	Ile	Val	Gly	Leu	Gly	Leu	Ile	Gly	
					1380					1385					
agt	tca	ctg	gct	ttg	tgt	atc	aaa	aaa	ggg	cat	cca	aac	agt	gag	4477

Ser	Ser	Leu	Ala	Leu	Cys	Ile	Lys	Lys	Gly	His	Pro	Asn	Ser	Glu	
1390					1395					1400					
att	atc	ggt	ttc	gat	aat	caa	gcg	gag	gca	act	gaa	ttt	gct	aag	4522
Ile	Ile	Gly	Phe	Asp	Asn	Gln	Ala	Glu	Ala	Thr	Glu	Phe	Ala	Lys	
1405					1410					1415					
aaa	acg	ggt	cta	att	gat	gag	ata	gct	gaa	tct	tta	aca	agt	ggg	4567
Lys	Thr	Gly	Leu	Ile	Asp	Glu	Ile	Ala	Glu	Ser	Leu	Thr	Ser	Gly	
1420					1425					1430					
gca	aga	cga	gca	gag	att	att	ttt	ctt	tgt	tcc	cca	gtt	aaa	gca	4612
Ala	Arg	Arg	Ala	Glu	Ile	Ile	Phe	Leu	Cys	Ser	Pro	Val	Lys	Ala	
1435					1440					1445					
act	tta	gta	caa	cta	gaa	gaa	tta	aac	caa	tta	tca	cta	gaa	act	4657
Thr	Leu	Val	Gln	Leu	Glu	Glu	Leu	Asn	Gln	Leu	Ser	Leu	Glu	Thr	
1450					1455					1460					
gct	ctg	atc	aca	gat	gtg	ggt	agt	acc	aag	gtg	gaa	att	aat	cag	4702
Ala	Leu	Ile	Thr	Asp	Val	Gly	Ser	Thr	Lys	Val	Glu	Ile	Asn	Gln	
1465					1470					1475					
tta	gca	aca	aag	ctt	aac	atg	aaa	aat	ttt	att	ggt	ggt	cat	cca	4747
Leu	Ala	Thr	Lys	Leu	Asn	Met	Lys	Asn	Phe	Ile	Gly	Gly	His	Pro	
1480					1485					1490					
atg	gct	ggt	tca	cat	aaa	tcc	ggc	gta	aca	gcc	gct	gat	gaa	cgt	4792
Met	Ala	Gly	Ser	His	Lys	Ser	Gly	Val	Thr	Ala	Ala	Asp	Glu	Arg	
1495					1500					1505					
ttg	ttt	gaa	aat	gcc	tac	tat	att	ttt	acc	gat	gac	cat	ggc	gaa	4837
Leu	Phe	Glu	Asn	Ala	Tyr	Tyr	Ile	Phe	Thr	Asp	Asp	His	Gly	Glu	
1510					1515					1520					
aaa	aac	aaa	cag	att	cag	gag	tta	caa	acg	tta	cta	aaa	gga	acg	4882
Lys	Asn	Lys	Gln	Ile	Gln	Glu	Leu	Gln	Thr	Leu	Leu	Lys	Gly	Thr	
1525					1530					1535					
cat	gcg	aag	ttt	att	acg	atg	cct	gca	cag	gaa	cat	gat	gaa	att	4927
His	Ala	Lys	Phe	Ile	Thr	Met	Pro	Ala	Gln	Glu	His	Asp	Glu	Ile	
1540					1545					1550					
act	ggt	gct	cta	agt	cac	ttg	cca	cat	att	gtt	gcc	gca	gcg	tta	4972
Thr	Gly	Ala	Leu	Ser	His	Leu	Pro	His	Ile	Val	Ala	Ala	Ala	Leu	
1555					1560					1565					
gtg	aac	gaa	agt	cag	caa	ctg	aat	acc	act	tac	cct	aga	gcg	cag	5017
Val	Asn	Glu	Ser	Gln	Gln	Leu	Asn	Thr	Thr	Tyr	Pro	Arg	Ala	Gln	
1570					1575					1580					
cag	cta	gcg	gct	gga	gga	ttc	aga	gat	att	act	cga	att	gct	tcc	5062
Gln	Leu	Ala	Ala	Gly	Gly	Phe	Arg	Asp	Ile	Thr	Arg	Ile	Ala	Ser	
1585					1590					1595					
tct	gat	gca	acg	atg	tgg	acg	gat	att	tta	tta	agc	aat	cgc	tta	5107
Ser	Asp	Ala	Thr	Met	Trp	Thr	Asp	Ile	Leu	Leu	Ser	Asn	Arg	Leu	

1600	1605	1610	
gta tta ttg gac tta cta	gaa aat tgg caa aaa	gag atg act act	5152
Val Leu Leu Asp Leu Leu	Glu Asn Trp Gln Lys	Glu Met Thr Thr	
1615	1620	1625	
gtt tgc caa tgg tta aca	gaa aaa aat gcc cca	gct att cgt aat	5197
Val Cys Gln Trp Leu Thr	Glu Lys Asn Ala Pro	Ala Ile Arg Asn	
1630	1635	1640	
ttt ttt gat aag gcc aaa	gaa aca cgt gct caa	ttg cct att cat	5242
Phe Phe Asp Lys Ala Lys	Glu Thr Arg Ala Gln	Leu Pro Ile His	
1645	1650	1655	
aaa gaa ggc gca atc cca	gct ttc tat gat ctg	ttt gtt gat gta	5287
Lys Glu Gly Ala Ile Pro	Ala Phe Tyr Asp Leu	Phe Val Asp Val	
1660	1665	1670	
cca gat caa cca gga atc	att gct gaa att acg	caa att tta ggc	5332
Pro Asp Gln Pro Gly Ile	Ile Ala Glu Ile Thr	Gln Ile Leu Gly	
1675	1680	1685	
gaa gcg gac ctt tct ctt	aca aat att aaa att	tta gaa acg aga	5377
Glu Ala Asp Leu Ser Leu	Thr Asn Ile Lys Ile	Leu Glu Thr Arg	
1690	1695	1700	
gaa gaa atc tat ggg att	ctt caa ttg tct ttt	aaa aat caa cca	5422
Glu Glu Ile Tyr Gly Ile	Leu Gln Leu Ser Phe	Lys Asn Gln Pro	
1705	1710	1715	
gac tgc caa gct gca aaa	caa att tta tct aaa	aaa acg aac tat	5467
Asp Cys Gln Ala Ala Lys	Gln Ile Leu Ser Lys	Lys Thr Asn Tyr	
1720	1725	1730	
acg tgt tac gaa aaa taa	gaggtg atg agg gtg caa	cta cgt aca aat	5515
Thr Cys Tyr Glu Lys	Met Arg Val Gln Leu	Arg Thr Asn	
1735	1740	1745	
gtg aag cat tta caa ggg	act ctg atg gtt cct	agc gac aaa tcg	5560
Val Lys His Leu Gln Gly	Thr Leu Met Val Pro	Ser Asp Lys Ser	
1750	1755	1760	
att tcc cat aga agt att	atg ttt gga gcg att	tct tct gga aaa	5605
Ile Ser His Arg Ser Ile	Met Phe Gly Ala Ile	Ser Ser Gly Lys	
1765	1770	1775	
acg acg att aca aat ttt	cta aga ggc gaa gat	tgt tta agt acc	5650
Thr Thr Ile Thr Asn Phe	Leu Arg Gly Glu Asp	Cys Leu Ser Thr	
1780	1785	1790	
tta gcg gcg ttt cgt tct	tta ggt gtg aac att	gaa gat gac ggg	5695
Leu Ala Ala Phe Arg Ser	Leu Gly Val Asn Ile	Glu Asp Asp Gly	
1795	1800	1805	
acg aca atc acc gtt gag	ggg cga gga ttt gca	ggc tta aaa aag	5740
Thr Thr Ile Thr Val Glu	Gly Arg Gly Phe Ala	Gly Leu Lys Lys	
1810	1815	1820	

gcg aag aat	aca att gat gtt	gga aat tca ggg	aca aca att	cgt	5785
Ala Lys Asn	Thr Ile Asp Val	Gly Asn Ser Gly	Thr Thr Ile	Arg	
1825		1830		1835	
ctg atg ctg	ggc att tta gct	ggc tgt ccc ttt	gaa acg cgc	cta	5830
Leu Met Leu	Gly Ile Leu Ala	Gly Cys Pro Phe	Glu Thr Arg	Leu	
1840		1845		1850	
gct ggt gat	gcg tct att gcc	aaa cga cca atg	aat cgt gta	atg	5875
Ala Gly Asp	Ala Ser Ile Ala	Lys Arg Pro Met	Asn Arg Val	Met	
1855		1860		1865	
ctt cct tta	aac caa atg gga	gcg gaa tgt caa	ggg gtt cag	caa	5920
Leu Pro Leu	Asn Gln Met Gly	Ala Glu Cys Gln	Gly Val Gln	Gln	
1870		1875		1880	
acg gag ttt	ccg cca att tct	att cgc ggg act	caa aat ttg	caa	5965
Thr Glu Phe	Pro Pro Ile Ser	Ile Arg Gly Thr	Gln Asn Leu	Gln	
1885		1890		1895	
ccg att gac	tac aca atg cct	gtt gca agt gct	caa gtt aaa	tcg	6010
Pro Ile Asp	Tyr Thr Met Pro	Val Ala Ser Ala	Gln Val Lys	Ser	
1900		1905		1910	
gct att tta	ttc gcc gct ttg	caa gcc gag ggc	act tct gta	gtg	6055
Ala Ile Leu	Phe Ala Ala Leu	Gln Ala Glu Gly	Thr Ser Val	Val	
1915		1920		1925	
gtt gag aaa	gaa aag aca cgt	gat cat aca gaa	gag atg att	cga	6100
Val Glu Lys	Glu Lys Thr Arg	Asp His Thr Glu	Glu Met Ile	Arg	
1930		1935		1940	
caa ttt ggt	ggg aca ctt gaa	gta gac ggt aaa	aaa att atg	tta	6145
Gln Phe Gly	Gly Thr Leu Glu	Val Asp Gly Lys	Lys Ile Met	Leu	
1945		1950		1955	
act gga ccg	caa caa tta aca	ggg caa aat gtg	gta gtt cct	ggg	6190
Thr Gly Pro	Gln Gln Leu Thr	Gly Gln Asn Val	Val Val Pro	Gly	
1960		1965		1970	
gat atc tct	tct gca gct ttc	ttt tta gtt gcg	ggg tta gta	gtc	6235
Asp Ile Ser	Ser Ala Ala Phe	Phe Leu Val Ala	Gly Leu Val	Val	
1975		1980		1985	
cca gat agc	gag ata ctt ctg	aaa aat gtt ggc	tta aat caa	acg	6280
Pro Asp Ser	Glu Ile Leu Leu	Lys Asn Val Gly	Leu Asn Gln	Thr	
1990		1995		2000	
cgg aca ggt	att tta gat gtg	att aaa aac atg	ggc ggt tcc	gtc	6325
Arg Thr Gly	Ile Leu Asp Val	Ile Lys Asn Met	Gly Gly Ser	Val	
2005		2010		2015	
act att tta	aat gaa gat gag	gcc aat cat tct	ggc gat tta	ctt	6370
Thr Ile Leu	Asn Glu Asp Glu	Ala Asn His Ser	Gly Asp Leu	Leu	
2020		2025		2030	

gta aaa acg	agt caa tta aca gct	aca gag att ggt ggc	gct att	6415
Val Lys Thr	Ser Gln Leu Thr Ala	Thr Glu Ile Gly Gly	Ala Ile	
2035	2040	2045		
atc cca cgt	tta att gat gag tta	ccg att att gct ttg	tta gct	6460
Ile Pro Arg	Leu Ile Asp Glu Leu	Pro Ile Ile Ala Leu	Leu Ala	
2050	2055	2060		
act cag gct	act ggc acg aca atc	att cga gat gca gaa	gaa ttg	6505
Thr Gln Ala	Thr Gly Thr Thr Ile	Ile Arg Asp Ala Glu	Glu Leu	
2065	2070	2075		
aaa gtc aaa	gaa acc aat cgg att	gat gca gta gcg aaa	gaa tta	6550
Lys Val Lys	Glu Thr Asn Arg Ile	Asp Ala Val Ala Lys	Glu Leu	
2080	2085	2090		
aca att tta	ggc gcc gac atc acg	cct act gat gat ggc	tta att	6595
Thr Ile Leu	Gly Ala Asp Ile Thr	Pro Thr Asp Asp Gly	Leu Ile	
2095	2100	2105		
ata cat gga	cca act tct tta cat	ggg gga aga gtt acc	agt tat	6640
Ile His Gly	Pro Thr Ser Leu His	Gly Gly Arg Val Thr	Ser Tyr	
2110	2115	2120		
ggg gat cat	cgt atc ggg atg atg	tta caa att gct gca	tta ctt	6685
Gly Asp His	Arg Ile Gly Met Met	Leu Gln Ile Ala Ala	Leu Leu	
2125	2130	2135		
gta aaa gaa	ggc act gtt gaa tta	gat aag gct gaa gca	gtt tca	6730
Val Lys Glu	Gly Thr Val Glu Leu	Asp Lys Ala Glu Ala	Val Ser	
2140	2145	2150		
gtt tct tat	cca gca ttt ttt gac	gac tta gaa cgt tta	agt tgt	6775
Val Ser Tyr	Pro Ala Phe Phe Asp	Asp Leu Glu Arg Leu	Ser Cys	
2155	2160	2165		
taa cgaaggagga	taacga acc atg gaa	agc att gtt tta att	ggg ttc	6824
	Thr Met Glu	Ser Ile Val Leu Ile	Gly Phe	
	2170	2175		
atg ggt gcg	ggg aaa aca act atc	ggc caa agt ttg gcc	aat aaa	6869
Met Gly Ala	Gly Lys Thr Thr Ile	Gly Gln Ser Leu Ala	Asn Lys	
2180	2185	2190		
ctg aag atg	cct cat ctt gat tta	gat aca gcg tta att	gaa aaa	6914
Leu Lys Met	Pro His Leu Asp Leu	Asp Thr Ala Leu Ile	Glu Lys	
2195	2200	2205		
ata gga cgc	tca att cct gac tat	ttc gaa aaa tat ggt	gaa gca	6959
Ile Gly Arg	Ser Ile Pro Asp Tyr	Phe Glu Lys Tyr Gly	Glu Ala	
2210	2215	2220		
gct ttc cga	gaa cag gaa acc caa	ctt tta aag gag ctg	tca aaa	7004
Ala Phe Arg	Glu Gln Glu Thr Gln	Leu Leu Lys Glu Leu	Ser Lys	
2225	2230	2235		
aat aca gcc	gtc ctt tca act ggg	ggc ggg att gtt gtc	gga cca	7049

Asn Thr Ala Val Leu Ser Thr Gly Gly Gly Ile Val Val Gly Pro	
2240 2245 2250	
gaa aat cgt agc tta tta aaa tct ttt cag caa gtg att tat tta	7094
Glu Asn Arg Ser Leu Leu Lys Ser Phe Gln Gln Val Ile Tyr Leu	
2255 2260 2265	
cat gcg aca cca gaa gag ctg tta aaa aga atc aca gaa gat act	7139
His Ala Thr Pro Glu Glu Leu Lys Arg Ile Thr Glu Asp Thr	
2270 2275 2280	
gaa aac caa cgg ccc tta gct ata gaa cgt tct tca aaa gaa atc	7184
Glu Asn Gln Arg Pro Leu Ala Ile Glu Arg Ser Ser Lys Glu Ile	
2285 2290 2295	
att act ttg ttt gag tct cgt aaa aat ttt tat gaa gaa tgt gcg	7229
Ile Thr Leu Phe Glu Ser Arg Lys Asn Phe Tyr Glu Glu Cys Ala	
2300 2305 2310	
aag atg aca att gat acg acc aat cgc tcg cca gaa gaa att atc	7274
Lys Met Thr Ile Asp Thr Thr Asn Arg Ser Pro Glu Glu Ile Ile	
2315 2320 2325	
aat gaa att ctg caa caa tta aag gag tag agaaacg atg aaa gtt	7320
Asn Glu Ile Leu Gln Gln Leu Lys Glu Met Lys Val	
2330 2335	
ggt tat tta ggt cgg att ggt tcc ttt acg tac agt gca acg ttg	7365
Gly Tyr Leu Gly Pro Ile Gly Ser Phe Thr Tyr Ser Ala Thr Leu	
2340 2345 2350	
gct gct ttt cct gaa gct acg ttg atg ccg tac gca tcg att cca	7410
Ala Ala Phe Pro Glu Ala Thr Leu Met Pro Tyr Ala Ser Ile Pro	
2355 2360 2365	
gct tgc ttg aaa gca att gaa cag caa gaa gtg gca tgg agc att	7455
Ala Cys Leu Lys Ala Ile Glu Gln Gln Glu Val Ala Trp Ser Ile	
2370 2375 2380	
atc cca ata gaa aac acg att gaa gga act gtt aac gca tcg ata	7500
Ile Pro Ile Glu Asn Thr Ile Glu Gly Thr Val Asn Ala Ser Ile	
2385 2390 2395	
gat tat ttg tat cat caa gcg cag tta cct gtc caa gca gag tta	7545
Asp Tyr Leu Tyr His Gln Ala Gln Leu Pro Val Gln Ala Glu Leu	
2400 2405 2410	
gtt tta ccg att caa caa caa tta atg gtg gca aaa gag aat caa	7590
Val Leu Pro Ile Gln Gln Gln Leu Met Val Ala Lys Glu Asn Gln	
2415 2420 2425	
gcg atc tgg caa caa agt cag aaa att tta tca cat ccg caa gca	7635
Ala Ile Trp Gln Gln Ser Gln Lys Ile Leu Ser His Pro Gln Ala	
2430 2435 2440	
tta gct caa tcg cag atg ttt cta gag aaa aac ttt cca gaa gcg	7680
Leu Ala Gln Ser Gln Met Phe Leu Glu Lys Asn Phe Pro Glu Ala	



2445	2450	2455	
att tta gaa gca aca cct tca aca gct tac gcc gcc aaa tac att			7725
Ile Leu Glu Ala Thr Pro Ser Thr Ala Tyr Ala Ala Lys Tyr Ile			
2460	2465	2470	
gca gaa cat cca gaa tta cct ttt gca gct att gca cca aaa ctt			7770
Ala Glu His Pro Glu Leu Pro Phe Ala Ala Ile Ala Pro Lys Leu			
2475	2480	2485	
tct gcg gaa atg tat gat ttg acc att gtt gaa aaa aat ata caa			7815
Ser Ala Glu Met Tyr Asp Leu Thr Ile Val Glu Lys Asn Ile Gln			
2490	2495	2500	
gat tta tcg gta aat caa acc cga ttt tgg gtt ctt ggt tct gaa			7860
Asp Leu Ser Val Asn Gln Thr Arg Phe Trp Val Leu Gly Ser Glu			
2505	2510	2515	
aat tta gcg att tct ttc ccg cta tct gag aaa aaa ata aca ctg			7905
Asn Leu Ala Ile Ser Phe Pro Leu Ser Glu Lys Lys Ile Thr Leu			
2520	2525	2530	
gcg att acg atg cca agt aat gtt cct ggc tct tta cac aaa gta			7950
Ala Ile Thr Met Pro Ser Asn Val Pro Gly Ser Leu His Lys Val			
2535	2540	2545	
tta agc gtg ttt agt tgg cga ggg att aat ctt agc aaa ata gaa			7995
Leu Ser Val Phe Ser Trp Arg Gly Ile Asn Leu Ser Lys Ile Glu			
2550	2555	2560	
tcg cgg ccg ttg aaa aca aag cta gga gag tac ttc ttt tta atg			8040
Ser Arg Pro Leu Lys Thr Lys Leu Gly Glu Tyr Phe Phe Leu Met			
2565	2570	2575	
gac tta gtg aaa gat caa cca gaa aaa tta att gaa gca gcc tta			8085
Asp Leu Val Lys Asp Gln Pro Glu Lys Leu Ile Glu Ala Ala Leu			
2580	2585	2590	
aca gaa ctg gaa ctc att ggt gca gaa ata aaa att tta ggg gat			8130
Thr Glu Leu Glu Leu Ile Gly Ala Glu Ile Lys Ile Leu Gly Asp			
2595	2600	2605	
tac ccg atc tat gtt ttg tcc aca ctt taa agagttaaaa atgaaaatga			8180
Tyr Pro Ile Tyr Val Leu Ser Thr Leu			
2610	2615		
agcttactta ttagataaag tgagtttcat tttttattaa attacatatt tgtaatagga			8240
atttctgtg aaatgaggta tctaagaaa ggtgataaaa cacagaggta aaggagtgc			8300
acgatgagtc gtgtagatcg ttataaacat attcatgaaa tcttttc			8347

<210> 32  
 <211> 867  
 <212> DNA  
 <213> Enterococcus faecalis

<400> 32  
atgaaagaaa taactggagc cactcggttta gctgggctat tcgcgaaacc cagccaacac 60  
agtatttcac cggttgattca taatacagca tttcaaaatt taggagttga tgctcggtat 120  
ctggcggttg acgttggaca agagacattg ccacaagcaa ttgaagcgat tcgaacgttt 180  
cacatgttag gggccaactt atcaatgccc aataaagtgg cggctgtaag ttatatggat 240  
gaactaagtc ctaccgctca actgggtggc gcaattaata cgattgtcaa caaagatgga 300  
aaactttacg gagacagcac ggatgggtact gggtttatgt ggagtttgaa agagaaaaag 360  
gttgacgttt ttcagaataa aatgaccatc ttaggaacag gtggtgcagc cttatcaatc 420  
attgcccaag ctgctttaga tggcgtgaaa gaaatcgccg tttacaacag gaaaagcgcg 480  
ggctttaacg acagtcaaaa aaaactggca aatttactg aacgaaccaa ctgtgtaatt 540  
catttaaacg atttagcgga tactgaaaaa ctagcaaaag atgttgctga aagcgtcttg 600  
ttagttaatg caacgagtgt gggatatgcat ccacatgccc atagtagtcc tatagaaaat 660  
tatgcaatga ttcaaccgaa gttatttgtg tatgatgcta tttataatcc cagagaaaca 720  
cagttattaa aagaagcccg tttacgtggc gcagaaacaa gcaacggctt ggacatgcta 780  
ctttatcaag gcgctgctgc ttttgaacaa tggacaggac aaaaaatgcc tgtatcagtc 840  
gtaaaacgta aaattgaaaa tagataa 867

<210> 33  
<211> 1026  
<212> DNA  
<213> *Enterococcus faecalis*

<400> 33  
atgatcgtaa ttatgaaaga aaatgcaacc gaaaagcaaa tgaaacaagt cattgattta 60  
gtaacaggtg caggcttaac tactcaaaca agtcaagata atggaaaaac agtgataggc 120  
ttgattggtg atacagaaaa attagttgaa gcagagttaa cagcattaga aggcgtggag 180  
aaaagtgtcc gcatttcggt gtcttacaaa ctaacgagtc gtttatttca tccagagaat 240  
acagtgggtg atgtgaacgg tgttaaaatc ggtgacggca gtatgaccat gatggcgggc 300  
ccttgttcaa tcgaaagctt agatcagatt cgcgaatgtg cgcgaattgc taaagctgga 360  
ggtgcaacaa ttttacgagg tgggtgcattc aaacctagaa cgtcgccata cgctttccaa 420  
ggactagaag aagaaggact aaaatacatt cgccaagcgg ctgatgaatt agatatgcaa 480  
gtcattacag aagtgatgga tgaagcgaat ttagaacttg tcgcaaaata cagtgcatt 540

ttacaaatcg gtgcgcgcaa catgcaaaat ttcaagttat tacaagcggg tggtaaaact	600
ggaaaaccta ttggcttaaa acgcgggatt gctggtacga ttgatgaatg gctaaacgca	660
gctgaataca ttgctgcgca aggaaatttc aatgtgatct tcattgaacg tgggattcgt	720
acgtacgaaa ccgtacgcg caatacactt gatttaagtg cggcgccttt aattaaaaaa	780
ttaagtcatt ttccaattat tgttgatccg agtcatggtg ttggtatctg ggatttagta	840
ccgccaatgg cccgagcagg tgttgcttca ggtgcggacg gcttgattgt agaaattcat	900
ccagatccag cgaatgcgtg gtcagatggg ccacaatcct tgaatgaaaa aacttaccta	960
cgtatgatga aagaagttca tatcatcgaa aaagcaatga aagaaattaa tgctttagaa	1020
gattag	1026

<210> 34  
 <211> 1077  
 <212> DNA  
 <213> Enterococcus faecalis

<400> 34	
atgaaattaa ccgtaacgtt acctacacat tcatatgatt taaccatcga aacagggtgcc	60
ttagataaaa ttggcacctg ggtacgtagc ctgtggcagc cacaacgggt agcgattatt	120
accgatgaaa cgggtgaataa attatatggc gcagctggtg agaaagaatt gcaagctgct	180
ggttttgaaa catcattgat tgctgtagcg gcagggtgaac aaagtaagag cctcgaaata	240
gctcaactgc tttatgattt tttagcggaa cagcaattga ctcgaaagtga tggctctaatt	300
gctttaggtg gaggcgttgt gggagatcta gctggatttg tcgcttcaac ctatatgcgc	360
ggtattcact ttttgcaagt accaacaacc ttactggcac aagtagatag tagcattgga	420
ggtaaaacag cggttaatac taaaaaagcc aaaaatcttg tcgggtacttt tgcccaacca	480
gatggggttt taattgatcc taatacactt aaaacattag aacctagacg tgtgcgtgaa	540
ggaattgcag aaattgtaaa atcagcagct atcgctgatg ttgaattgtg gcaccgttta	600
tcctctttgg aaaatgaaca agatttagtg gcacatgcag aagaaattat cacggcctgt	660
tgcaagatta aacgtgatgt cgtcgaagaa gatgaattag atttgggctt acgtttgatt	720
ctgaattttg ggcatacgat cggccacgca ttagaaaata cagctgggta cggggtgatt	780
gctcacgggtg aaggcgtttc tttaggaatg attcaaataa ctcaagtcgc agaacaacaa	840
gggctttccc cacttgggac tacccaagag ttggtcacca tgctagaaaa gttccattta	900
ccagtaacca cagatcgttg gtcagaagaa cgtctctatc aagcaattac acatgataaa	960

aaaacacgtg ggggacagat taaaatcatt gtcttagaaa aaattgggtca agcgaaaatt 1020

gtctcttttac caacggaaga aattcgagca tttttaaaca gagaaggagg aatttaa 1077

<210> 35

<211> 1167

<212> DNA

<213> Enterococcus faecalis

<400> 35

atgcgcttta ttacagcagg cgaatcacat ggacctgaat taactgctat tattgaaggc 60

ttaccagccg gcttgccctt aagtagcgaa gagattaacc gagaattagc aagacgtcaa 120

ggcgggttacg gtcgtggggg acggatgaaa attgaaaaag accaagtacg tattacttcg 180

ggtattcggc atggtaaaac acttggtctca ccagtaacgt tgattgtcga aaacaaagac 240

tggaaaaatt ggacctccgt gatgtcagta gagccagttc ctgaaaaaca aaagaaaatc 300

cgccgcgtca gcaaaccacg tccaggacat gctgatttag tcggtggcat gaaatatcaa 360

catgatgatt tacggaatgt tttagaacgg tcttcggcac gagaaacaac gatgcgtgtg 420

gcgattggtg cggttgctaa aaaactctta gctgaactgg atatccaagt cgctgggcat 480

gtcgcggtat taggtgggat tgaagctacg atccctgaaa atttaacgat tcgtgaaatt 540

caagaacgat ctgaacaatc tgccgttcgc gtattagatc cttccgtaga agaaaaaatg 600

aaagaactaa ttgaccaaac caagaaaaat ggcgatacaa ttggtggggg agtagaagta 660

cttgtgggtg gcgttcacg tggcttaggt agctatgtcc aatgggatcg taaactagat 720

gccaaaattg cgcaagcagt tgtaagcatc aacgctttta caggtgctga gtttggcatt 780

ggatttgaaa tggcacaacg ccctggtagt caactgatgg acgagattgt ttgggacgaa 840

agtactggtt ataccagaac ttccaacaat ttaggcggtt ttgaaggagg aatgaccaac 900

ggaatgccaa tcatcgttcg tgggtgcatg aaacctattc caacccttta taaaccatta 960

caaagcgtga atattgatac aaaagagcct tataaggcca gtgttgagcg ctctgatagc 1020

acggcgggtac cggccgctag cgttgtttgt gaagccgttg ttgcaacgga agtagcaaag 1080

gctatgctcg aaaaatttga tagtgactca tttgaacaaa tgaaagaagc agtgaaacgt 1140

tatcgtctat atactcaaaa cttttaa 1167

<210> 36

<211> 1095

<212> DNA

<213> Enterococcus faecalis

<400> 36  
atgaagaaac gtattttaat cgtaggatta gggctaatacg ggagttcact ggctttgtgt 60  
atcaaaaaag ggcattccaaa cagtgaagatt atcggtttcg ataatacaagc ggaggcaact 120  
gaatttgcta agaaaacggg tctaattgat gagatagctg aatctttaac aagtggggca 180  
agacgagcag agattatattt tctttgttcc ccagttaaag caactttagt acaactagaa 240  
gaattaaacc aattatcact agaaactgct ctgatcacag atgtgggtag taccaagggtg 300  
gaaattaatc agtttagcaac aaagcttaac atgaaaaatt ttattgggtg tcatccaatg 360  
gctgggttcac ataaatccgg cgtaacagcc gctgatgaac gtttgtttga aaatgcctac 420  
tatatttttta ccgatgacca tggcgaaaaa aacaaacaga ttcaggagtt acaaactgta 480  
ctaaaaggaa cgcattgcga gtttattacg atgcctgcac aggaacatga tgaaattact 540  
gggtgctctaa gtcacttgcc acatattggt gccgcagcgt tagtgaacga aagtcagcaa 600  
ctgaatacca cttaccctag agcgcagcag ctagcggtg gaggattcag agatattact 660  
cgaattgctt cctctgatgc aacgatgtgg acggatattt tattaagcaa tcgcttagta 720  
ttattggact tactagaaaa ttggcaaaaa gagatgacta ctgtttgcca atggttaaca 780  
gaaaaaatg cccagctat tcgtaatttt ttgataagg ccaaagaaac acgtgctcaa 840  
ttgcctattc ataaagaagg cgcaatccca gctttctatg atctgtttgt tgatgtacca 900  
gatcaaccag gaatcattgc tgaaattacg caaattttag gcgaagcgga cctttctctt 960  
acaaatatta aaattttaga aacgagagaa gaaatctatg ggattcttca attgtctttt 1020  
aaaaatcaac cagactgcc aagctgcaaaa caaattttat ctaaaaaaac gaactatacg 1080  
tgttacgaaa aataa 1095

<210> 37  
<211> 1287  
<212> DNA  
<213> *Enterococcus faecalis*

<400> 37  
atgaggggtgc aactacgtac aaatgtgaag catttacaag ggactctgat ggttcctagc 60  
gacaaatcga tttcccatag aagtattatg tttggagcga tttcttctgg aaaaacgacg 120  
attacaaatt ttctaagagg cgaagattgt ttaagtacct tagcggcggt tcgttcttta 180  
gggtgtgaaca ttgaagatga cgggacgaca atcacggttg aggggcgagg atttgcaggc 240  
ttaaaaaagg cgaagaatac aattgatgtt ggaaattcag ggacaacaat tcgtctgatg 300  
ctgggcattt tagctggctg tccctttgaa acgcgcctag ctggtgatgc gtctattgcc 360

aaacgaccaa tgaatcgtgt aatgcttcct ttaaaccaaa tgggagcgga atgtcaaggg	420
gttcagcaaa cggagtttcc gccaatctct attcgcggga ctcaaaattt gcaaccgatt	480
gactacacaa tgctgttgc aagtgtcaa gttaaactcg ctattttatt cgccgctttg	540
caagccgagg gcacttctgt agtggttgag aaagaaaaga cacgtgatca tacagaagag	600
atgattcgac aatttggtgg gacacttgaa gtagacggta aaaaaattat gttaactgga	660
ccgcaacaat taacaggtca aaatgtggta gttcctgggtg atatctcttc tgcagctttc	720
tttttagttg cgggtttagt agtccagat agcgagatac ttctgaaaaa tgttggttta	780
aatcaaacgc ggacaggtat tttagatgtg attaaaaaca tgggcgggttc cgtcactatt	840
ttaaatagaag atgaggccaa tcattctggc gatttacttg taaaaacgag tcaattaaca	900
gctacagaga ttggtggcgc tattatccca cgtttaattg atgagttacc gattattgct	960
ttgttagcta cttaggtac tggcagaca atcattcgag atgcagaaga attgaaagtc	1020
aaagaaacca atcggattga tgcagtagcg aaagaattaa caattttagg cgccgacatc	1080
acgcctactg atgatggctt aattatacat ggaccaactt ctttacatgg tggaagagtt	1140
accagttatg gggatcatcg tatcgggatg atgttacaaa ttgctgcatt acttgtaaaa	1200
gaaggcactg ttgaattaga taaggctgaa gcagtttcag tttcttatcc agcatttttt	1260
gacgacttag aacgtttaag ttgttaa	1287

<210> 38  
 <211> 507  
 <212> DNA  
 <213> Enterococcus faecalis

<400> 38	
atggaaagca ttgttttaat tggtttcatt ggtgcgggta aaacaactat cggccaaagt	60
ttggccaata aactgaagat gcctcatctt gatttagata cagcgttaat tgaaaaata	120
ggacgtcaa ttcctgacta tttcgaaaaa tatggtgaag cagctttccg agaacaggaa	180
accaactttt taaaggagct gtcaaaaaat acagccgtcc tttcaactgg gggcgggatt	240
gttgctggac cagaaaatcg tagcttatta aaatcttttc agcaagtgat ttatttacat	300
gcgacaccag aagagctgtt aaaaagaatc acagaagata ctgaaaacca acggccctta	360
gctatagaac gttcttcaaa agaaatcatt actttgtttg agtctcgtaa aaatttttat	420
gaagaatgtg cgaagatgac aattgatacg accaatcgct cgccagaaga aattatcaat	480
gaaattctgc aacaattaaa ggagtag	507

<210> 39  
 <211> 849  
 <212> DNA  
 <213> Enterococcus faecalis

<400> 39  
 atgaaagttg gttatttagg tccgattggg tcctttacgt acagtgcac gttggctgct 60  
 tttcctgaag ctacgttgat gccgtacgca tcgattccag cttgcttgaa agcaattgaa 120  
 cagcaagaag tggcatggag cattatccca atagaaaaca cgattgaagg aactgttaac 180  
 gcatcgatag attatttgta tcatcaagcg cagttacctg tccaagcaga gttagtttta 240  
 ccgattcaac aacaattaat ggtggcaaaa gagaatcaag cgatctggca acaaagtcag 300  
 aaaattttat cacatccgca agcattagct caatcgcaga tgtttctaga gaaaaacttt 360  
 ccagaagcga ttttagaagc aacaccttca acagcttacg ccgcaaata cattgcagaa 420  
 catccagaat taccttttgc agctattgca ccaaaacttt ctgcggaaat gtatgatttg 480  
 accattgttg aaaaaaatat acaagattta tcggtaaatc aaaccgatt ttgggttctt 540  
 ggttctgaaa atttagcgat ttctttcccg ctatctgaga aaaaaataac actggcgatt 600  
 acgatgccaa gtaatgttcc tggctcttta cacaaagtat taagcgtggt tagttggcga 660  
 gggattaatc ttagcaaaat agaatcgcg cgttgaaaa caaagctagg agagtacttc 720  
 tttttaatgg acttagtgaa agatcaacca gaaaaattaa ttgaagcagc cttaacagaa 780  
 ctggaactca ttggtgcaga aataaaaatt ttaggggatt acccgatcta tgttttgtcc 840  
 acactttaa 849

<210> 40  
 <211> 288  
 <212> PRT  
 <213> Enterococcus faecalis

<400> 40  
 Met Lys Glu Ile Thr Gly Ala Thr Arg Leu Ala Gly Leu Phe Ala Lys  
 1 5 10 15  
 Pro Ser Gln His Ser Ile Ser Pro Leu Ile His Asn Thr Ala Phe Gln  
 20 25 30  
 Asn Leu Gly Val Asp Ala Arg Tyr Leu Ala Phe Asp Val Gly Gln Glu  
 35 40 45

Thr Leu Pro Gln Ala Ile Glu Ala Ile Arg Thr Phe His Met Leu Gly  
50 55 60

Ala Asn Leu Ser Met Pro Asn Lys Val Ala Ala Val Ser Tyr Met Asp  
65 70 75 80

Glu Leu Ser Pro Thr Ala Gln Leu Val Gly Ala Ile Asn Thr Ile Val  
85 90 95

Asn Lys Asp Gly Lys Leu Tyr Gly Asp Ser Thr Asp Gly Thr Gly Phe  
100 105 110

Met Trp Ser Leu Lys Glu Lys Lys Val Asp Val Phe Gln Asn Lys Met  
115 120 125

Thr Ile Leu Gly Thr Gly Gly Ala Ala Leu Ser Ile Ile Ala Gln Ala  
130 135 140

Ala Leu Asp Gly Val Lys Glu Ile Ala Val Tyr Asn Arg Lys Ser Ala  
145 150 155 160

Gly Phe Asn Asp Ser Gln Lys Lys Leu Ala Asn Phe Thr Glu Arg Thr  
165 170 175

Asn Cys Val Ile His Leu Asn Asp Leu Ala Asp Thr Glu Lys Leu Ala  
180 185 190

Lys Asp Val Ala Glu Ser Val Leu Leu Val Asn Ala Thr Ser Val Gly  
195 200 205

Met His Pro His Ala His Ser Ser Pro Ile Glu Asn Tyr Ala Met Ile  
210 215 220

Gln Pro Lys Leu Phe Val Tyr Asp Ala Ile Tyr Asn Pro Arg Glu Thr  
225 230 235 240

Gln Leu Leu Lys Glu Ala Arg Leu Arg Gly Ala Glu Thr Ser Asn Gly  
245 250 255

Leu Asp Met Leu Leu Tyr Gln Gly Ala Ala Ala Phe Glu Gln Trp Thr  
260 265 270



Gly Gln Lys Met Pro Val Ser Val Val Lys Arg Lys Ile Glu Asn Arg  
 275 280 285

<210> 41  
 <211> 341  
 <212> PRT  
 <213> Enterococcus faecalis

<400> 41

Met Ile Val Ile Met Lys Glu Asn Ala Thr Glu Lys Gln Met Lys Gln  
 1 5 10 15

Val Ile Asp Leu Val Thr Gly Ala Gly Leu Thr Thr Gln Thr Ser Gln  
 20 25 30

Asp Asn Gly Lys Thr Val Ile Gly Leu Ile Gly Asp Thr Glu Lys Leu  
 35 40 45

Val Glu Ala Glu Leu Thr Ala Leu Glu Gly Val Glu Lys Ser Val Arg  
 50 55 60

Ile Ser Leu Ser Tyr Lys Leu Thr Ser Arg Leu Phe His Pro Glu Asn  
 65 70 75 80

Thr Val Val Asp Val Asn Gly Val Lys Ile Gly Asp Gly Ser Met Thr  
 85 90 95

Met Met Ala Gly Pro Cys Ser Ile Glu Ser Leu Asp Gln Ile Arg Glu  
 100 105 110

Cys Ala Arg Ile Ala Lys Ala Gly Gly Ala Thr Ile Leu Arg Gly Gly  
 115 120 125

Ala Phe Lys Pro Arg Thr Ser Pro Tyr Ala Phe Gln Gly Leu Glu Glu  
 130 135 140

Glu Gly Leu Lys Tyr Ile Arg Gln Ala Ala Asp Glu Leu Asp Met Gln  
 145 150 155 160

Val Ile Thr Glu Val Met Asp Glu Ala Asn Leu Glu Leu Val Ala Lys  
 165 170 175

Tyr Ser Asp Ile Leu Gln Ile Gly Ala Arg Asn Met Gln Asn Phe Lys  
 180 185 190

Leu Leu Gln Ala Val Gly Lys Thr Gly Lys Pro Ile Gly Leu Lys Arg  
195 200 205

Gly Ile Ala Gly Thr Ile Asp Glu Trp Leu Asn Ala Ala Glu Tyr Ile  
210 215 220

Ala Ala Gln Gly Asn Phe Asn Val Ile Phe Ile Glu Arg Gly Ile Arg  
225 230 235 240

Thr Tyr Glu Thr Ala Thr Arg Asn Thr Leu Asp Leu Ser Ala Val Pro  
245 250 255

Leu Ile Lys Lys Leu Ser His Phe Pro Ile Ile Val Asp Pro Ser His  
260 265 270

Gly Val Gly Ile Trp Asp Leu Val Pro Pro Met Ala Arg Ala Gly Val  
275 280 285

Ala Ser Gly Ala Asp Gly Leu Ile Val Glu Ile His Pro Asp Pro Ala  
290 295 300

Asn Ala Trp Ser Asp Gly Pro Gln Ser Leu Asn Glu Lys Thr Tyr Leu  
305 310 315 320

Arg Met Met Lys Glu Val His Ile Ile Glu Lys Ala Met Lys Glu Ile  
325 330 335

Asn Ala Leu Glu Asp  
340

<210> 42  
<211> 358  
<212> PRT  
<213> Enterococcus faecalis

<400> 42

Met Lys Leu Thr Val Thr Leu Pro Thr His Ser Tyr Asp Leu Thr Ile  
1 5 10 15

Glu Thr Gly Ala Leu Asp Lys Ile Gly Thr Trp Val Arg Ser Leu Trp  
20 25 30

Gln Pro Gln Arg Val Ala Ile Ile Thr Asp Glu Thr Val Asn Lys Leu  
 35 40 45

Tyr Gly Ala Ala Val Glu Lys Glu Leu Gln Ala Ala Gly Phe Glu Thr  
 50 55 60

Ser Leu Ile Ala Val Ala Ala Gly Glu Gln Ser Lys Ser Leu Glu Ile  
 65 70 75 80

Ala Gln Leu Leu Tyr Asp Phe Leu Ala Glu Gln Gln Leu Thr Arg Ser  
 85 90 95

Asp Gly Leu Ile Ala Leu Gly Gly Gly Val Val Gly Asp Leu Ala Gly  
 100 105 110

Phe Val Ala Ser Thr Tyr Met Arg Gly Ile His Phe Leu Gln Val Pro  
 115 120 125

Thr Thr Leu Leu Ala Gln Val Asp Ser Ser Ile Gly Gly Lys Thr Ala  
 130 135 140

Val Asn Thr Lys Lys Ala Lys Asn Leu Val Gly Thr Phe Ala Gln Pro  
 145 150 155 160

Asp Gly Val Leu Ile Asp Pro Asn Thr Leu Lys Thr Leu Glu Pro Arg  
 165 170 175

Arg Val Arg Glu Gly Ile Ala Glu Ile Val Lys Ser Ala Ala Ile Ala  
 180 185 190

Asp Val Glu Leu Trp His Arg Leu Ser Ser Leu Glu Asn Glu Gln Asp  
 195 200 205

Leu Val Ala His Ala Glu Glu Ile Ile Thr Ala Cys Cys Lys Ile Lys  
 210 215 220

Arg Asp Val Val Glu Glu Asp Glu Leu Asp Leu Gly Leu Arg Leu Ile  
 225 230 235 240

Leu Asn Phe Gly His Thr Ile Gly His Ala Leu Glu Asn Thr Ala Gly  
 245 250 255

Tyr Gly Val Ile Ala His Gly Glu Gly Val Ser Leu Gly Met Ile Gln

260	265	270
Ile Thr Gln Val Ala Glu Gln Gln Gly Leu Ser Pro Leu Gly Thr Thr		
275	280	285
Gln Glu Leu Val Thr Met Leu Glu Lys Phe His Leu Pro Val Thr Thr		
290	295	300
Asp Arg Trp Ser Glu Glu Arg Leu Tyr Gln Ala Ile Thr His Asp Lys		
305	310	315
Lys Thr Arg Gly Gly Gln Ile Lys Ile Ile Val Leu Glu Lys Ile Gly		
325	330	335
Gln Ala Lys Ile Val Ser Leu Pro Thr Glu Glu Ile Arg Ala Phe Leu		
340	345	350
Asn Arg Glu Gly Gly Ile		
355		
<210> 43		
<211> 388		
<212> PRT		
<213> Enterococcus faecalis		
<400> 43		
Met Arg Phe Ile Thr Ala Gly Glu Ser His Gly Pro Glu Leu Thr Ala		
1	5	10
Ile Ile Glu Gly Leu Pro Ala Gly Leu Pro Leu Ser Ser Glu Glu Ile		
20	25	30
Asn Arg Glu Leu Ala Arg Arg Gln Gly Gly Tyr Gly Arg Gly Gly Arg		
35	40	45
Met Lys Ile Glu Lys Asp Gln Val Arg Ile Thr Ser Gly Ile Arg His		
50	55	60
Gly Lys Thr Leu Gly Ser Pro Val Thr Leu Ile Val Glu Asn Lys Asp		
65	70	75
Trp Lys Asn Trp Thr Ser Val Met Ser Val Glu Pro Val Pro Glu Lys		
85	90	95

Gln Lys Lys Ile Arg Arg Val Ser Lys Pro Arg Pro Gly His Ala Asp  
 100 105 110

Leu Val Gly Gly Met Lys Tyr Gln His Asp Asp Leu Arg Asn Val Leu  
 115 120 125

Glu Arg Ser Ser Ala Arg Glu Thr Thr Met Arg Val Ala Ile Gly Ala  
 130 135 140

Val Ala Lys Lys Leu Leu Ala Glu Leu Asp Ile Gln Val Ala Gly His  
 145 150 155 160

Val Ala Val Leu Gly Gly Ile Glu Ala Thr Ile Pro Glu Asn Leu Thr  
 165 170 175

Ile Arg Glu Ile Gln Glu Arg Ser Glu Gln Ser Ala Val Arg Val Leu  
 180 185 190

Asp Pro Ser Val Glu Glu Lys Met Lys Glu Leu Ile Asp Gln Thr Lys  
 195 200 205

Lys Asn Gly Asp Thr Ile Gly Gly Val Val Glu Val Leu Val Gly Gly  
 210 215 220

Val Pro Ala Gly Leu Gly Ser Tyr Val Gln Trp Asp Arg Lys Leu Asp  
 225 230 235 240

Ala Lys Ile Ala Gln Ala Val Val Ser Ile Asn Ala Phe Thr Gly Ala  
 245 250 255

Glu Phe Gly Ile Gly Phe Glu Met Ala Gln Arg Pro Gly Ser Gln Leu  
 260 265 270

Met Asp Glu Ile Val Trp Asp Glu Ser Thr Gly Tyr Thr Arg Thr Ser  
 275 280 285

Asn Asn Leu Gly Gly Phe Glu Gly Gly Met Thr Asn Gly Met Pro Ile  
 290 295 300

Ile Val Arg Gly Val Met Lys Pro Ile Pro Thr Leu Tyr Lys Pro Leu  
 305 310 315 320

Gln Ser Val Asn Ile Asp Thr Lys Glu Pro Tyr Lys Ala Ser Val Glu  
 325 330 335

Arg Ser Asp Ser Thr Ala Val Pro Ala Ala Ser Val Val Cys Glu Ala  
 340 345 350

Val Val Ala Thr Glu Val Ala Lys Ala Met Leu Glu Lys Phe Asp Ser  
 355 360 365

Asp Ser Phe Glu Gln Met Lys Glu Ala Val Lys Arg Tyr Arg Leu Tyr  
 370 375 380

Thr Gln Asn Phe  
 385

<210> 44  
 <211> 364  
 <212> PRT  
 <213> Enterococcus faecalis

<400> 44

Met Lys Lys Arg Ile Leu Ile Val Gly Leu Gly Leu Ile Gly Ser Ser  
 1 5 10 15

Leu Ala Leu Cys Ile Lys Lys Gly His Pro Asn Ser Glu Ile Ile Gly  
 20 25 30

Phe Asp Asn Gln Ala Glu Ala Thr Glu Phe Ala Lys Lys Thr Gly Leu  
 35 40 45

Ile Asp Glu Ile Ala Glu Ser Leu Thr Ser Gly Ala Arg Arg Ala Glu  
 50 55 60

Ile Ile Phe Leu Cys Ser Pro Val Lys Ala Thr Leu Val Gln Leu Glu  
 65 70 75 80

Glu Leu Asn Gln Leu Ser Leu Glu Thr Ala Leu Ile Thr Asp Val Gly  
 85 90 95

Ser Thr Lys Val Glu Ile Asn Gln Leu Ala Thr Lys Leu Asn Met Lys  
 100 105 110

Asn Phe Ile Gly Gly His Pro Met Ala Gly Ser His Lys Ser Gly Val  
 115 120 125

Thr Ala Ala Asp Glu Arg Leu Phe Glu Asn Ala Tyr Tyr Ile Phe Thr  
130 135 140

Asp Asp His Gly Glu Lys Asn Lys Gln Ile Gln Glu Leu Gln Thr Leu  
145 150 155 160

Leu Lys Gly Thr His Ala Lys Phe Ile Thr Met Pro Ala Gln Glu His  
165 170 175

Asp Glu Ile Thr Gly Ala Leu Ser His Leu Pro His Ile Val Ala Ala  
180 185 190

Ala Leu Val Asn Glu Ser Gln Gln Leu Asn Thr Thr Tyr Pro Arg Ala  
195 200 205

Gln Gln Leu Ala Ala Gly Gly Phe Arg Asp Ile Thr Arg Ile Ala Ser  
210 215 220

Ser Asp Ala Thr Met Trp Thr Asp Ile Leu Leu Ser Asn Arg Leu Val  
225 230 235 240

Leu Leu Asp Leu Leu Glu Asn Trp Gln Lys Glu Met Thr Thr Val Cys  
245 250 255

Gln Trp Leu Thr Glu Lys Asn Ala Pro Ala Ile Arg Asn Phe Phe Asp  
260 265 270

Lys Ala Lys Glu Thr Arg Ala Gln Leu Pro Ile His Lys Glu Gly Ala  
275 280 285

Ile Pro Ala Phe Tyr Asp Leu Phe Val Asp Val Pro Asp Gln Pro Gly  
290 295 300

Ile Ile Ala Glu Ile Thr Gln Ile Leu Gly Glu Ala Asp Leu Ser Leu  
305 310 315 320

Thr Asn Ile Lys Ile Leu Glu Thr Arg Glu Glu Ile Tyr Gly Ile Leu  
325 330 335

Gln Leu Ser Phe Lys Asn Gln Pro Asp Cys Gln Ala Ala Lys Gln Ile  
340 345 350

Leu Ser Lys Lys Thr Asn Tyr Thr Cys Tyr Glu Lys  
 355 360

<210> 45  
 <211> 428  
 <212> PRT  
 <213> Enterococcus faecalis

<400> 45

Met Arg Val Gln Leu Arg Thr Asn Val Lys His Leu Gln Gly Thr Leu  
 1 5 10 15

Met Val Pro Ser Asp Lys Ser Ile Ser His Arg Ser Ile Met Phe Gly  
 20 25 30

Ala Ile Ser Ser Gly Lys Thr Thr Ile Thr Asn Phe Leu Arg Gly Glu  
 35 40 45

Asp Cys Leu Ser Thr Leu Ala Ala Phe Arg Ser Leu Gly Val Asn Ile  
 50 55 60

Glu Asp Asp Gly Thr Thr Ile Thr Val Glu Gly Arg Gly Phe Ala Gly  
 65 70 75 80

Leu Lys Lys Ala Lys Asn Thr Ile Asp Val Gly Asn Ser Gly Thr Thr  
 85 90 95

Ile Arg Leu Met Leu Gly Ile Leu Ala Gly Cys Pro Phe Glu Thr Arg  
 100 105 110

Leu Ala Gly Asp Ala Ser Ile Ala Lys Arg Pro Met Asn Arg Val Met  
 115 120 125

Leu Pro Leu Asn Gln Met Gly Ala Glu Cys Gln Gly Val Gln Gln Thr  
 130 135 140

Glu Phe Pro Pro Ile Ser Ile Arg Gly Thr Gln Asn Leu Gln Pro Ile  
 145 150 155 160

Asp Tyr Thr Met Pro Val Ala Ser Ala Gln Val Lys Ser Ala Ile Leu  
 165 170 175

Phe Ala Ala Leu Gln Ala Glu Gly Thr Ser Val Val Val Glu Lys Glu



180		185		190
Lys Thr Arg Asp His Thr Glu Glu Met Ile Arg Gln Phe Gly Gly Thr	195	200		205
Leu Glu Val Asp Gly Lys Lys Ile Met Leu Thr Gly Pro Gln Gln Leu	210	215		220
Thr Gly Gln Asn Val Val Val Pro Gly Asp Ile Ser Ser Ala Ala Phe	225	230	235	240
Phe Leu Val Ala Gly Leu Val Val Pro Asp Ser Glu Ile Leu Leu Lys	245	250		255
Asn Val Gly Leu Asn Gln Thr Arg Thr Gly Ile Leu Asp Val Ile Lys	260	265		270
Asn Met Gly Gly Ser Val Thr Ile Leu Asn Glu Asp Glu Ala Asn His	275	280		285
Ser Gly Asp Leu Leu Val Lys Thr Ser Gln Leu Thr Ala Thr Glu Ile	290	295		300
Gly Gly Ala Ile Ile Pro Arg Leu Ile Asp Glu Leu Pro Ile Ile Ala	305	310	315	320
Leu Leu Ala Thr Gln Ala Thr Gly Thr Thr Ile Ile Arg Asp Ala Glu	325		330	335
Glu Leu Lys Val Lys Glu Thr Asn Arg Ile Asp Ala Val Ala Lys Glu	340		345	350
Leu Thr Ile Leu Gly Ala Asp Ile Thr Pro Thr Asp Asp Gly Leu Ile	355	360		365
Ile His Gly Pro Thr Ser Leu His Gly Gly Arg Val Thr Ser Tyr Gly	370	375		380
Asp His Arg Ile Gly Met Met Leu Gln Ile Ala Ala Leu Leu Val Lys	385	390	395	400
Glu Gly Thr Val Glu Leu Asp Lys Ala Glu Ala Val Ser Val Ser Tyr	405		410	415

Pro Ala Phe Phe Asp Asp Leu Glu Arg Leu Ser Cys  
 420 425

<210> 46  
 <211> 168  
 <212> PRT  
 <213> Enterococcus faecalis  
 <400> 46

Met Glu Ser Ile Val Leu Ile Gly Phe Met Gly Ala Gly Lys Thr Thr  
 1 5 10 15

Ile Gly Gln Ser Leu Ala Asn Lys Leu Lys Met Pro His Leu Asp Leu  
 20 25 30

Asp Thr Ala Leu Ile Glu Lys Ile Gly Arg Ser Ile Pro Asp Tyr Phe  
 35 40 45

Glu Lys Tyr Gly Glu Ala Ala Phe Arg Glu Gln Glu Thr Gln Leu Leu  
 50 55 60

Lys Glu Leu Ser Lys Asn Thr Ala Val Leu Ser Thr Gly Gly Gly Ile  
 65 70 75 80

Val Val Gly Pro Glu Asn Arg Ser Leu Leu Lys Ser Phe Gln Gln Val  
 85 90 95

Ile Tyr Leu His Ala Thr Pro Glu Glu Leu Leu Lys Arg Ile Thr Glu  
 100 105 110

Asp Thr Glu Asn Gln Arg Pro Leu Ala Ile Glu Arg Ser Ser Lys Glu  
 115 120 125

Ile Ile Thr Leu Phe Glu Ser Arg Lys Asn Phe Tyr Glu Glu Cys Ala  
 130 135 140

Lys Met Thr Ile Asp Thr Thr Asn Arg Ser Pro Glu Glu Ile Ile Asn  
 145 150 155 160

Glu Ile Leu Gln Gln Leu Lys Glu  
 165

<210> 47  
 <211> 282  
 <212> PRT  
 <213> Enterococcus faecalis

<400> 47

Met Lys Val Gly Tyr Leu Gly Pro Ile Gly Ser Phe Thr Tyr Ser Ala  
 1 5 10 15

Thr Leu Ala Ala Phe Pro Glu Ala Thr Leu Met Pro Tyr Ala Ser Ile  
 20 25 30

Pro Ala Cys Leu Lys Ala Ile Glu Gln Gln Glu Val Ala Trp Ser Ile  
 35 40 45

Ile Pro Ile Glu Asn Thr Ile Glu Gly Thr Val Asn Ala Ser Ile Asp  
 50 55 60

Tyr Leu Tyr His Gln Ala Gln Leu Pro Val Gln Ala Glu Leu Val Leu  
 65 70 75 80

Pro Ile Gln Gln Gln Leu Met Val Ala Lys Glu Asn Gln Ala Ile Trp  
 85 90 95

Gln Gln Ser Gln Lys Ile Leu Ser His Pro Gln Ala Leu Ala Gln Ser  
 100 105 110

Gln Met Phe Leu Glu Lys Asn Phe Pro Glu Ala Ile Leu Glu Ala Thr  
 115 120 125

Pro Ser Thr Ala Tyr Ala Ala Lys Tyr Ile Ala Glu His Pro Glu Leu  
 130 135 140

Pro Phe Ala Ala Ile Ala Pro Lys Leu Ser Ala Glu Met Tyr Asp Leu  
 145 150 155 160

Thr Ile Val Glu Lys Asn Ile Gln Asp Leu Ser Val Asn Gln Thr Arg  
 165 170 175

Phe Trp Val Leu Gly Ser Glu Asn Leu Ala Ile Ser Phe Pro Leu Ser  
 180 185 190

Glu Lys Lys Ile Thr Leu Ala Ile Thr Met Pro Ser Asn Val Pro Gly  
 195 200 205

Ser Leu His Lys Val Leu Ser Val Phe Ser Trp Arg Gly Ile Asn Leu  
210 215 220

Ser Lys Ile Glu Ser Arg Pro Leu Lys Thr Lys Leu Gly Glu Tyr Phe  
225 230 235 240

Phe Leu Met Asp Leu Val Lys Asp Gln Pro Glu Lys Leu Ile Glu Ala  
245 250 255

Ala Leu Thr Glu Leu Glu Leu Ile Gly Ala Glu Ile Lys Ile Leu Gly  
260 265 270

Asp Tyr Pro Ile Tyr Val Leu Ser Thr Leu  
275 280